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# TERRORISM TAXES IT PLANNING

## New rules for financial firms to force upgrades

**BY PATRICK THIBODEAU  
AND LUCAS MEARIAN**  
WASHINGTON

Antiterrorism legislation recently signed by President George W. Bush appears likely to force financial services firms to invest in new technology and upgrade older systems. The law is designed to make it easier for law enforcers to combat money laundering and track down and freeze terrorists' assets.

The legislation calls for reg-  
*New Rules, page 16*

## One-day stock trade settlements in doubt

BY LUCAS MEARIAN

The events of Sept. 11 have caused some financial services executives to question the viability of reducing the time it takes to settle stock market trades from three days to one. The \$8 billion industrywide "trade plus one day" initiative has been derailed by disaster recovery considerations.

The Securities Industry Association last month moved the target date for the launch of T+1 from 2004 to June 2005, *Stock Trades*, page 16

## DISASTER PLANS AID N.Y. INSURER

## Trade Center tenant keeps systems running

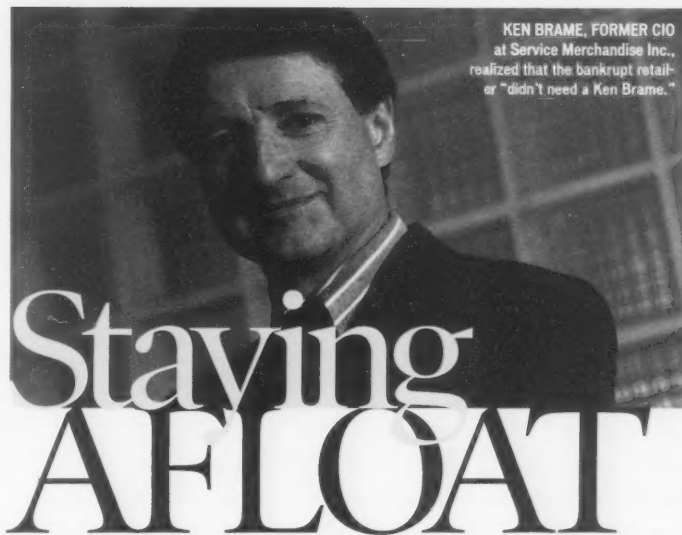
**BY BOB BREWIN**  
NEW YORK

Kenny Klepper, senior vice president of systems, technology and infrastructure at Empire Blue Cross Blue Shield,

had just finished explaining last week how his company had quickly reconstituted its systems after being blown out of 10 floors in the World Trade Center. Someone tapped discreetly on his door. He stepped out for a moment, then returned and abruptly ended a *Computerworld* interview.

"We had to evacuate the data center on Staten Island due to anthrax," he said. "And even though the data center is still

*Insurer, page 69*



**KEN BRAME, FORMER CIO**  
at Service Merchandise Inc.,  
realized that the bankrupt retailer  
or "didn't need a Ken Brame."

**At bankrupt companies, IT professionals struggle when new projects** sink and spending money evaporates. They get depressed and wonder how much longer they'll have jobs. That can present tough challenges, but forward-thinking IT managers like former Service Merchandise CIO Ken Brame can take steps to help their companies cope with Chapter 11.

Story by Kim S. Nash begins on page 30.

## MICROSOFT, DOJ MAKE A DEAL; COMPETITORS CRY FOUL

## Court gives states until Tuesday to weigh in

**BY PATRICK THIBODEAU  
AND CAROL SLIWA**  
WASHINGTON

The Microsoft antitrust case is finally drawing to an end, on terms that aren't likely to have a significant impact on corporate users or Microsoft Corp.

The U.S. Justice Department Friday reached a settlement with the software giant that it said will curb the company's predatory business practices and give competitors the free-

dom to offer rival products.

But the case isn't over yet. The 18 states that joined the DOJ's pursuit of Microsoft are still deciding whether to accept the Bush administration's agreement. State officials were ordered last week by U.S. District Court Judge Colleen Kollar-Kotelly to return to court Tuesday morning to give their answer.

Some state officials last week seemed inclined to settle.

The settlement brings "results now, in real time," said Connecticut Attorney General Richard Blumenthal, outside of

court. "Time, in this industry, is not on our side."

But Blumenthal and other state attorneys general said they wouldn't commit to supporting the DOJ's settlement until they have had an opportunity to discuss it.

The agreement is receiving fierce opposition from trade groups representing Microsoft competitors.

"They basically capitulated," said Ed Black, CEO of the Washington-based Computer & Communications Industry Association, whose members

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## COMPUTER CONSCIOUSNESS

In this week's Future Watch, Stephen M. Younger, a nuclear physicist and former senior associate director at Los Alamos National Laboratory, outlines his vision for computers so powerful they could become "self-aware." **PAGE 52**



## IS THE CO-CIO ROLE A FAD?

Not at Ameritrade, where a pair of IT leaders have charged up their operation through job sharing. **PAGE 34**

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**Quick Link**

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## OPINIONS

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**24 Maryfran Johnson** says there's a long way to go before a national ID card program makes practical sense.

**24 Pimm Fox** writes that Secure Sockets Layer is great at securing Web transmissions, but it still leaves you exposed at the database level.

**25 David Foote** says that in the aftermath of Sept. 11, it's the right time to engage in revolutionary thinking. But remember some key truths about managing businesses and people.

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## LEVERAGING RELATIONSHIPS

Jeff Zabin, a director of Boston-based Seurat, talks about the need to get the most out of relationships with customers, partners and employees in order to create a successful online business and survive tough economic times.

[www.computerworld.com/ecommerce](http://www.computerworld.com/ecommerce)

## NATIONAL ID DEBATE

*Computerworld* editor in chief Maryfran Johnson has had her say on the subject of issuing national ID cards. Now hear what two industry leaders think we should carry in our wallets.

[www.computerworld.com/security](http://www.computerworld.com/security)

## AT DEADLINE

### European Cookie Ban Up for Vote

The European Parliament is scheduled to vote next week on a proposal to ban the use of Internet cookies in European Union countries on privacy grounds. If it passes, the measure could require big changes to Web sites that put cookies on the PCs of visitors to gather user registration data and information about how they're using a specific site.

### IT Services Firm Genuity Plans Cuts

Genuity Inc., a Woburn, Mass.-based provider of Web hosting and corporate Internet access services, said it plans to cut up to 1,200 employees and contractors and consolidate several business units to save money. Genuity also reported a \$300.4 million third-quarter loss. The layoffs will decrease the company's workforce by about 24%.

### CSC's Profit Falls, But Revenue Rises

Computer Sciences Corp. reported a \$68.2 million profit for its second quarter ended Sept. 30, down 37% from the year-earlier total of \$109 million. But the El Segundo, Calif.-based IT consulting and outsourcing firm said revenue came in at \$2.77 billion, up 11% from \$2.5 billion in last year's second quarter. CSC predicted revenue growth of 9% to 11% for its full fiscal year.

### Report: XP Antipiracy Tool Cracked

The antipiracy technology in Microsoft Corp.'s Windows XP operating system has already been cracked, according to BitArts Labs, a U.K.-based digital rights management firm. Hours after Windows XP was launched Oct. 25, BitArts said, malicious coders in Asia began distributing a program that lets users bypass the Product Activation feature.

# Gartner: Include Remote Access in Disaster Planning

Recent building shutdowns highlight need for options during emergencies

BY JAIKUMAR VIJAYAN

**T**HE RECENT building shutdowns caused by the anthrax scare highlight the need for corporations to include remote access capabilities in disaster planning, according to a recent advisory from Gartner Inc. in Stamford, Conn.

Among the issues that organizations need to look at are the ability of employees to securely log on to enterprise networks from home, the kind of remote bandwidth employees have access to, and whether

employees have access to separate telephone lines.

Employers may also want to investigate the possibility of creating remote centers to work out of in the event of an emergency, the advisory said.

"Companies need to make sure they understand what capabilities they have from a remote access [perspective] and to incorporate that knowledge into their disaster plans," said John Girard, a Gartner analyst and co-author of the report.

Up until now, most corporations "considered remote access to be an alternate work-

style as opposed to a measure that can be used in an emergency," Girard said.

Gartner's advice comes at a time of mounting concerns that office buildings and mass transportation facilities could become contaminated by bio-toxins as a result of terrorist attacks. Such fears have already led to the temporary closure of several buildings in Washington and other cities.

As a result, it makes sense to make remote access a part of disaster planning, said Eric Bloom, a senior vice president at Independence Investment LLC, a Boston-based financial services company.

"I agree with Gartner 100%," Bloom said. "We've always had remote access capability as a

## Planning Ahead

As part of disaster planning, companies should inventory workers' remote capabilities:

1. Do employees have suitable home computers? Those who don't should be encouraged to bring their laptops home.
2. What is employees' access to bandwidth?
3. Do employees have separate telephone lines?

SOURCE: GARTNER INC. STAMFORD, CONN.

convenience so that people would be able to work from home. Now we are looking at it more tactically, as another type of disaster recovery plan."

Independence is reviewing the remote access capabilities of its employees and coming up with a series of measures to take in the event of a disaster. For instance, not all the towns in which its employees live support the high-bandwidth secure connections needed to log in to the company's network. So Independence is planning on publishing an internal list of locations where employees can go and securely dial in to the network.

Factoring remote access into disaster planning makes particular sense for smaller companies and those with just one or two office facilities, said Kurt Bahrs, a disaster recovery specialist at Hartford, Conn.-based Aetna Inc.

Aetna already provides secure remote access to its employees, who are able to log in to the corporate network from almost anywhere in the world, Bahrs said. The remote access capabilities of Aetna's IT staff have already been included in the company's current disaster plan. But Aetna hasn't yet studied the network and bandwidth implications of having all employees dialing in to the network remotely, he added. ▀

## OAUG Divided Over Closer Ties to Oracle

Members debate hosting joint event

BY MARC L. SONGINI

A sizable minority of the group serving users of Oracle Corp.'s business applications has no interest in working with the software company to produce an Oracle-sponsored trade show, according to a new survey. But the survey shows that a majority of the members of the Oracle Applications Users Group (OAUG) is at least open to the idea.

The survey results are coming to light just as the board of the independent organization is discussing possible collaboration on a joint trade event, something that has been a thorny issue during the past 18 months for both Oracle and the Atlanta-based OAUG.

In a recent OAUG survey of about 2,000 members, 33% of the respondents said they did-

n't want to participate in an Oracle show at all, although 67% said they were open to exploring ways the OAUG could collaborate in one. In addition, 92% voted to keep the OAUG's semiannual user events independent, despite repeated offers from Oracle to fold the conference into its own AppsWorld event.

The survey results were made available to Computerworld last week.

OAUG President Jeremy Young said the users group has agreed to review papers being submitted for presentation at Oracle's AppsWorld next April. But that show "is managed and controlled by Oracle," he said.

Young also noted that the survey "indicates the value [the users] see in the independent conferences we run. We

also see it as a continuing vote for the independence of the OAUG."

Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Daly City, Calif., said the survey "delineates the problem succinctly. A lot of

users don't want to work with Oracle, but two-thirds recognize they have to or should, irrespective of how they feel about Oracle or how Oracle feels about them. OAUG users aren't stupid and don't want to burn that bridge [of collaboration] completely."

A spokeswoman for Oracle said she sees the survey results as encouraging. "Either way, 67% is still way over half of the membership," she said, noting that it's unclear how many of the OAUG members are enterprise users. ▀

**67%**  
of OAUG members  
said they're open  
to exploring ways for  
the OAUG and Oracle  
to cooperate

**92%**  
said they want to  
keep OAUG user  
events independent  
of Oracle

SOURCE: OAUG SURVEY  
OF APPROXIMATELY 2,000  
OAUG MEMBERS

# Bush Plan to Unplug Feds From Internet Draws Criticism

Skeptics say GovNet wouldn't protect against internal threats

BY DAN VERTON  
WASHINGTON

The Bush administration's plan to build a multibillion-dollar secure government intranet to protect critical federal systems from security problems associated with the Internet may be flawed, critics contend.

Rep. Sherwood L. Boehlert (R-N.Y.), chairman of the House Science Committee, acknowledged last week that Richard Clarke, chairman of the president's Critical Infrastructure Protection Board, is

highly qualified to advise the president on cybersecurity. But he questioned Clarke's plan to disconnect the government from the Internet.

"I'm not sure that simply walling off government networks ... from the Internet is the right policy or whether such a system will actually improve security," said Boehlert.

According to an outline of the project released by the government, the key feature of the proposed intranet, which

has been dubbed GovNet, "is that it must be able to perform functions with no risk of penetration or disruption from users on other networks, such as the Internet." The government wants GovNet to be a private voice and data network based on Internet protocols but with no connectivity to commercial or public networks.

"Our first priority is to ensure that the federal government is securing its own systems," said Paul Kurtz, director

of critical infrastructure protection for the National Security Council.

Boehlert isn't alone in his skepticism about the GovNet concept.

Vinton Cerf, senior vice president for Internet architecture and technology at WorldCom Inc., said that although he can sympathize with the government's desire to guarantee the availability of network services during times of crisis, security through isolation "is likely to prove only partially effective."

James Woolsey, who served as CIA director under the Clinton administration, said GovNet wouldn't protect against

## DOMESTIC SECURITY

# Cockpit Video System Faces Uphill Battle for Certification

Qualcomm latest to enter market

BY BOB BREWIN

Qualcomm Inc. demonstrated a satellite-based aviation safety system last week, saying it could help prevent aircraft hijackings by relaying real-time video from airline cockpits and cabins to the ground and provide a dedicated voice communications channel for onboard air marshals.

San Diego-based Qualcomm plans to transmit the real-time data, which could include information from flight monitoring systems, over a satellite system in which it holds a minority interest, Globalstar Telecommunications LP. The raw data throughput of a single channel on the Globalstar system is 9.6K bit/sec., but Qualcomm said it could provide throughput of 128K bit/sec. by using multiple channels for its security system.

Qualcomm said in a statement that its satellite aviation safety system is "in the final stages" of certification by the Federal Aviation Administra-

tion (FAA). However, the FAA has described that certification process as complex and lengthy. Iridium Satellite LLC in Arlington, Va., has submitted a proposal to the FAA for a similar system using its satellite system. And Chicago-based The Boeing Co. has said it can provide the same capabilities through its Connexion by Boeing service. Connexion by Boeing was originally designed to provide high-speed Internet connections for passengers.

Tim Scannell, an analyst at Mobile Insights Inc. in Quincy, Mass., said any aviation security system that relies on either Iridium or Globalstar is "chancy" because of the financial conditions of both companies. Iridium has already filed for bankruptcy protection once, and Globalstar has suspended payments on the debt used to finance its \$850 million system last January.

Installing new avionics equipment on commercial air-

## JUST THE FACTS In-Flight Video Barriers

The FAA and the airlines consider in-flight cockpit security video technology a long shot because:

- Different cockpit video gear would need to be designed for every type of aircraft.
- Transmissions may interfere with other avionics navigation systems.
- Interference with other communication systems is possible.
- Installation in the existing fleet would be very complex.

craft is a "complex undertaking" and requires a long testing process, according to FAA spokesman William Shumann. The task is compounded because different satellite equipment would have to be designed for every kind of aircraft, ranging from small com-

muter planes to jumbo jets.

Management of live voice and video data streams would be equally difficult, Shumann said, noting that there are 35,000 to 40,000 flights each day in the U.S.

Comsat Mobile Communications in Bethesda, Md., a unit of Lockheed Martin Global Telecommunications Inc., has a leg up on the planned Qualcomm/Globalstar and Iridium aviation security systems because its equipment is already FAA-certified and operating worldwide, according to company spokesman Tom Surface.

Surface said that today, about 3,500 aircraft have Comsat satellite systems that are designed to provide crew communications services and passenger Internet service. He said the Comsat system could be adapted to provide the same kind of security services that Iridium and Qualcomm have proposed. ▀

## GovNet Plans

The proposed government network would:

- Be a contractor-operated network in the U.S. and Canada.
- Have dedicated hardware and personnel.
- Have no connections to the Internet or other networks.
- Provide commercial-grade voice and video communications with no connections to the public switched telephone network.
- Use National Security Agency hardware to encrypt network traffic (payload, not routing).
- Include bandwidth-on-demand services.

the fundamental network security threats posed by insiders and highly skilled hackers. Rather than improving security, GovNet would create "something in which there is a huge premium for Iraqi intelligence or Osama bin Laden to find some American who is willing to help him and be a clever hacker," Woolsey said at a security forum last month.

When Clarke first raised the subject of a series of virtual private networks (VPN) for both government and e-businesses at a conference on Internet security in May, the idea received a cool reception from industry leaders.

Ken Watson, director of critical infrastructure protection at Cisco Systems Inc., said, "I don't think it's viable on many levels."

George Samenuk, CEO and president of Santa Clara, Calif.-based Network Associates Inc., also dissented. "A VPN defeats the purpose, because most of the attacks are internal," he said.

Ironically, the U.S. Justice Department on Oct. 23 filed an indictment against a TRW Inc. employee who was arrested last year for using his authorized access to the intelligence community's secure intranet, known as Intelink, to download classified information and sell it to China.

"The problem is that not everyone in the government is guaranteed to be on our side," said Woolsey. ▀

## Clarification

In a story in our Oct. 29 issue about IT layoffs at American Airlines Inc.'s TWA Airlines LLC unit, we reported that according to American Airlines spokeswoman Julia Bishop-Cross, 200 of TWA's IT employees had been laid off. Bishop-Cross subsequently put that number at 40. However, IT employees at TWA, who spoke with *Computerworld* on condition of anonymity, said there have been as many as 420 layoffs.

# Network Routers Vulnerable To Denial-of-Service Attacks

*CERT report highlights potential threat of disruptions on large parts of the Internet*

BY JAIKUMAR VIJAYAN

**D**ENIAL-OF-SERVICE attacks that target and use misconfigured network routing equipment pose an "imminent and real threat" to Internet security, according to a recent report by Carnegie Mellon University's federally funded CERT Coordination Center.

Unlike denial-of-service attacks that involve individual servers, a router-based attack is harder to stop and could result in service disruptions across large swaths of the Internet.

"Routers, in essence, form the backbone of the Internet," said Kevin Houle, a member of CERT's staff. "So attacks that involve routing equipment raise the potential of entire sections of the infrastructure being [disrupted]."

Houle said CERT has received an increasing number of reports of intruders taking control of routers by using vendor-supplied default passwords. Once inside, an intruder could easily modify a router's configuration and protocol information to misdirect traffic over the Internet. Large sections of the network could be shut down by targeting critical routers, such as those belonging to a major Internet service provider, Houle said.

## Bedlam Brewing

"Once people start attacking routers in this manner, all hell will break loose," said K. Narayanaswamy, chief technical officer at Cs3 Inc., a Los Angeles-based security firm whose research in this area is partially funded by the Defense Advanced Research Projects Agency. "It's like taking the signs on a highway and

pointing them in all the wrong directions."

The vulnerability of routers has been known for a long time but has assumed critical importance following the Sept. 11 terrorist attacks and the heightened threat of cyberterrorism, Narayanaswamy added.

Compromised routers can also be used by intruders to scan networks for vulnerable systems and as launch points for more traditional denial-of-service attacks, which involve flooding a network with ex-

cess data, according to CERT.

While misconfigured routers are the most vulnerable, intruders are beginning to develop other ways of breaking into secure routers as well, according to analysts.

## Difficult but Doable

Compared with Web servers, critical routers generally are much harder to find — and therefore to attack — on a network, said Ted Julian, CEO of Arbor Networks Inc., a security vendor in Waltham, Mass.

Unlike vulnerable servers, which are often found by automated scanning tools, breaking into routers requires more inside information and sleuthing

to identify the crucial routers to attack, according to Julian. But if they are found and compromised, the resulting attacks could be "devastating," he said.

Although Arbor, like several other vendors such as Mazu Networks Inc. and Asta Networks Inc., sells tools to mitigate the effect of a denial-of-service attack targeting servers, there are few applications currently available to deal with router-based threats.

"There's not much you can do beyond making sure your own routers are secure [by changing default passwords]," said Edward York, chief technology officer at 724 Inc., an application hosting service pro-

vider in Lompoc, Calif.

The company's servers have been hit with eight denial-of-service attacks this year alone, most of which 724 managed to handle on its own, according to York.

"This is a real threat that is going to be even harder for the authorities to stop," said Ralph Kuntz, chief technology officer at Hamilton Scientific Ltd., a Roseland, N.J.-based application service provider for health care organizations.

One of Hamilton's routers was broken into earlier this year and used to scan networks for vulnerable servers, Kuntz said. The company learned of the compromised router only after receiving threatening letters from companies that had been scanned. ▀

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## Cisco Pushes VOIP With New Phone System, Hardware

BY JAMES COPE

Cisco Systems Inc. last week announced a bevy of voice over IP (VOIP) products, continuing the efforts of vendors to get technologies supporting phone services over data networks in shape for more widespread corporate adoption.

Cisco's rollout included software products such as an IP-based teleconferencing system as well as a series of hardware devices, among them a gateway that can connect 48 analog phones to a VOIP setup.

Kevin Wetzel, manager of global network services at adhesive, sealant and coatings maker H.B. Fuller Co. in St. Paul, Minn., said the announcements by Cisco underscore the increased technical viability of IP telephony.

H.B. Fuller currently uses Cisco-based IP phone systems at sites in Texas and Switzerland and plans to expand the technology to roughly 3,000

phones in 30 locations by next May, Wetzel said.

"Compared to a year ago, quality of service [for prioritizing voice packets over data networks] has become more defined," Wetzel said. In addition, software enhancements have increased the technology's reliability by adding more levels of redundancy, he said.

Payback on some parts of the VOIP implementation will likely take up to 36 months, Wetzel said. But, he added, H.B. Fuller expects to save \$2 million over the next five years by replacing its private branch exchange-based phone systems with IP technology.

## Emergency Calls

Joe Gagan, an analyst at The Yankee Group in Boston, said one of the most important items added by Cisco was support for identifying the locations of people who make 911 calls from IP phones.

## Flaw Prompts Cisco to Replace Firewalls

Cisco is being forced to replace some of its PIX corporate network firewall devices because of hardware flaws that can cause the systems to hang or shut down.

In a notice posted on its Web site in mid-October and updated last week, Cisco said PIX 515, 515-DC and 506 firewalls made between last May and Oct. 2 may stop functioning under heavy traffic loads. The company said the problem rests with a hardware component that it began buying from a new supplier in May.

The only surefire remedy is to replace the affected firewalls, Cisco said, adding that it would do so free of charge for registered users. A possible work-around is to limit traffic speeds through the firewall to 15M bit/sec. or less, but Cisco said the success of that maneuver "varies from unit to unit."

A Cisco spokeswoman said she couldn't specify how many PIX devices were sold with the

faulty component. But the problem applies to "a limited number of units," she said, and the likelihood that affected boxes will become unresponsive is "fairly low."

Cisco expects the biggest impact to be on the PIX 515 models, which are designed for use in corporate central offices. The spokeswoman said the flaw doesn't affect the security integrity of the firewalls. "It results in the box just stopping, as opposed to being hacked and controlled [by an intruder]," she added.

Cisco holds about one quarter of the firewall market, said Richard Stiennon, an analyst at Gartner Inc. in Stamford, Conn. The flaw highlights a potential problem with integrated hardware/software firewall appliances, he said.

According to Cisco, PIX firewalls manufactured as of Oct. 2 aren't affected by the flaw.

— Stephen Lawson of the IDG News Service and James Cope

Identifying the locations of 911 callers has been a big issue for VOIP in corporate settings, said David Passmore, an analyst at The Burton Group in

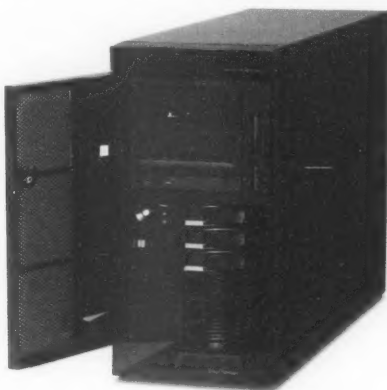
Salt Lake City. "Some states require you to be able to locate callers who have phones connected to the corporate Ethernet," Passmore said. ▀



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## BRIEFS

## Telecom Manager Is Named Polaroid CIO

Cambridge, Mass.-based Polaroid Corp., which filed for bankruptcy protection last month, named Cindy Micavich as its new CIO. Micavich replaces Tom Hennigan, who retired after 29 years at the company. Micavich, who manages global telecommunications at Polaroid, will keep that job and take over worldwide responsibility for the company's IT department.

## Testing Service, CSC In Outsourcing Deal

Princeton, N.J.-based Educational Testing Service (ETS) signed a \$300 million IT consulting and outsourcing deal with Computer Sciences Corp. (CSC) in El Segundo, Calif. All of the testing service's sites are covered by the 10-year agreement. Approximately 130 IT workers at ETS will be shifted to CSC when the contract takes effect in January.

## Times Victimized by New Nimda Variant

Servers at *The New York Times* were among the systems hit by a new variant of the Nimda worm that began circulating last week. The Nimda.e variant left the newspaper's editorial staff unable to access the Internet for about four hours before network traffic was rerouted around the infected servers. *The Times* later applied patches to the systems.

## Short Takes

San Jose-based software vendor BEA SYSTEMS INC. lowered its business forecast and said it will lay off about 300 employees by year's end, cutting its workforce by up to 10%. . . . IBM's LOTUS SOFTWARE GROUP said it will start selling a stand-alone version of its Discovery Server knowledge management tool, which was previously bundled with portal software.

# Businesses Tap IT to Make Up for Staff, Budget Cuts

*Many tech projects now aimed at helping companies deal with reduced resources*

BY LEE COPELAND

**T**HE ONGOING economic slump is prompting businesses to devote IT resources to projects aimed at keeping downsized enterprises humming in the face of across-the-board staff and budget cuts.

The United Air Lines Inc. unit of UAL Corp. is a case in point. The Sept. 11 terrorist attacks on the U.S., coupled with a sliding U.S. economy, prompted United to furlough almost 20,000 workers. That cut included 30% of the Chicago-based airline's IT staffers, or about 600 employees. But IT is still in the forefront of beefing up customer service and thus improving United's overall responsiveness to the immediate business climate.

"After having just reduced our workforce throughout the company, including reservations, that's putting a huge strain on the reservations people who have to call people and take calls from people," said United CIO Eric Dean.

In the midst of flight and staffing reductions, United last week launched a revamped reservations system. The system makeover was in the works prior to Sept. 11, but new functionality to handle automated rebookings and support readjusted flight schedules was added to alleviate burdens on the reservations staff and to make flight transfers easier for passengers.

"Largely, this was done to respond to what the real traffic currently is, rather than focus on just cost saving," said Dean. "But this is a revenue-generating mechanism to make flying more convenient."

United's IT operation is also stepping up the use of its Easy-Check-in self-service kiosks to compensate for fewer ticket-counter employees. Those kiosks allow customers to bypass long lines at airport ticket counters and retrieve boarding passes from automated machines.

## Widespread Aftershocks

Though the airlines face the double whammy of a limping economy and the consequences of the terrorist attacks, IT leaders in the industry aren't alone in instituting measures to ensure that technology investments are aligned with current business priorities.

Chicago-based USG Corp., the world's largest producer of Sheetrock, with \$4 billion in revenue last year, filed for

Chapter 11 bankruptcy protection this past summer. USG CIO Jean Holley said her IT budget remains intact, but she's adopting a more targeted approach to new development projects to ensure high quality controls and a fit with current business needs.

"We are now selling our product for half of what it sold for two years ago," said Holley. "My dollar amount [for IT spending] hasn't changed, but my runways are shorter. Instead of 50 projects, we do six and nail them before we move on."

Some of those projects include creating online design and materials estimation tools that contractors can use to determine Sheetrock requirements instead of calling a customer support representative.

Vin Melvin, CIO at SCI Systems Inc., has adopted a similar approach. The \$9 billion Huntsville, Ala.-based maker of electronic components has also abandoned the practice of

undertaking a flurry of projects at once.

"A lot of people in the IT organization were trying to stay three projects ahead. Now we're trying to gain value with one or two before starting something new," said Melvin, adding that a customer relationship management project is taking on renewed importance as SCI tries to keep better tabs on its customer responsiveness.

"IT is getting pulled in all directions at once," said David Bradshaw, an analyst at London-based Ovum Research Ltd. "But projects with immediate returns are still getting the nod."

Projects that stay on top of changing business requirements have renewed importance, as do those that offer immediate cost reductions, according to CIOs.

Headlamp and tail-light maker Guide Corp., for example, plans to launch a shop floor application early next year that's geared toward finding and reducing defective materials. By detecting defects early on, Guide has a better chance of fixing and reusing those products, and the company expects multimillion-dollar annual savings, said Jim Johnson, CIO at the Pendleton, Ind.-based manufacturer, which posted sales of \$600 million last year.

"The economic downturn has exacerbated the situation, but we were focused on trimming costs before," Johnson added. "You can't say IT is saving the company seven figures, but you can say IT is helping to meet our business objective of a seven-figure cost reduction in scrap materials." ■

## Tips for Tough Times

*With gloomy economic conditions expected to carry over to next year, IT leaders offer these tips for aligning IT with new business operations, such as large staff and cost reductions:*

- Remember that IT's role is to assist in meeting business needs, so set priorities and policies that reflect the current business climate.

*Eric Dean, CIO, United Airlines*

- Make the most of existing investments that were made during the economic boom of the last few years.

*John Moon, CIO, Baxter International Inc.*

- Scrutinize current IT expenditures to determine if that level of support is required in an economic climate that may mean fewer orders to process.

*Vin Melvin, CIO, SCI Systems Inc.*

- Finish what you start. Focus on fewer and more targeted IT projects instead of undertaking several at once.

*Jean Holley, CIO, USG Corp.*

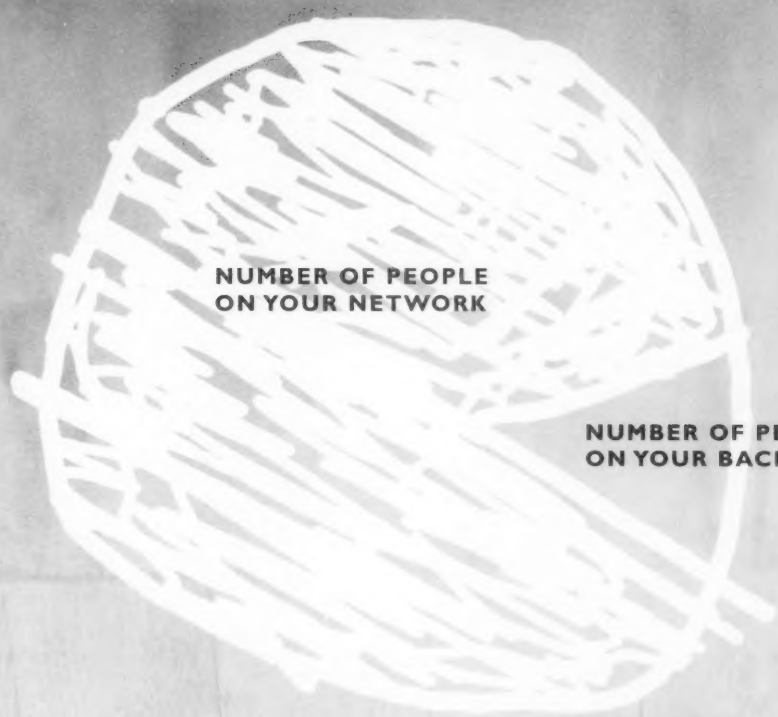
- Look for ways to institute IT-driven cost reductions, which can improve operating margins.

*Jim Johnson, CIO, Guide Corp.*

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# EMC Opens Tools to Rival Storage Devices

*User demands for interoperability prompt new approach on management software*

BY LUCAS MEARIAN

**B**OWING to user requests for open storage management capabilities, EMC Corp. last week announced a suite of tools that can control the company's storage devices and those made by rival vendors. Hopkinton, Mass.-based EMC said it can now offer IT managers a view of their storage-area net-

work (SAN) that includes disk arrays and tape systems from its major competitors, including Compaq Computer Corp., Hewlett-Packard Co., IBM, Sun Micro-systems Inc. and Network Appliance Inc.

The tools are aimed at users such as MasterCard International Inc., which manages pieces of its IISTB SAN with EMC's ControlCenter software. But that product supports only EMC's own storage equipment.

"Right now, you end up managing from different staffs," said Jim Hull, vice president of engineering services at Purchase, N.Y.-based MasterCard. "You have to pull two or three groups together to find out

what [storage you] have on the mainframe side, the Unix side or the Windows side."

But Hull said EMC's ControlCenter/Open Edition suite announced last week should let him consolidate resources to "have one control center managing the whole thing."

EMC has been considered one of the less-open storage vendors. But now it's "really throwing down the gauntlet," said Bill North, an analyst at IDC in Framingham, Mass. "The real question is, from a market penetration point of view, will they be successful as a software provider outside the EMC installed base?"

Joe Tucci, EMC's president and CEO, acknowledged during a press conference that the open storage management suite will transform the company. But, he said, users have

## IBM Pushes Midrange Array

IBM last week released a mid-range disk array targeted at EMC's Clarion product line and said it will stop reselling a similar device made by Compaq.

IBM's new FastT700 storage server provides 26 bit/sec. Fibre Channel connectivity and can handle up to 16TB of data. Anne MacFarland, an analyst at The Clipper Group Inc. in Wellesley, Mass., said the FastT700 has a slightly lower starting price than the Clarion 4700 and supports advanced storage functions such as remote data copying.

IBM has been reselling Compaq's MA8000 array under an agreement that was signed last year that also allows Compaq to market IBM's high-end Shark devices. But now that IBM has fleshed out its own midrange products, it no longer needs to offer the Compaq box, said Bob Samson, worldwide vice president of sales and operations for IBM's storage systems group.

Samson also said some users had been playing the two companies against each other on pricing because they were selling the same product.

- Lucas Mearian

## Users: Progress Slow on Supply Chain Projects

*Tight budgets, supplier problems prolong paybacks*

BY MARC L. SONGINI

For some users whose companies have invested in costly supply chain management systems, the heady promise of those projects is giving way to a more challenging reality.

Several supply chain managers said they're contending with problems such as inadequate IT resources, faulty data entries by external users and hesitation on the part of suppliers about adopting the new systems. That's slowing the process of making the systems pay off, they said.

"Our progress has been very slow," said Deb Kunkler, pro-

curement manager at Idaho Power Co. Limited access to IT staff support and a tight budget are delaying a planned upgrade of Idaho Power's procurement system, preventing the Boise-based utility from adding more suppliers to the system and taking full advantage of the applications it's using, Kunkler said.

### Anticipated Growth

Sales of supply chain software are still expected to grow by 28% this year, reaching a total of \$6.6 billion, according to a report by AMR Research Inc. in Boston. Supply chain vendors such as Dallas-based i2 Technologies Inc., which announced an upgrade of its applications last month, are counting on new projects to help boost sales.

But users are now more cautious about their supply chain

## Managed Storage

EMC's ControlCenter/Open Edition storage management suite includes the following new products:

**ControlCenter Replication Manager:** Automates the scheduling of data backups and disk replication procedures on various devices.

**ControlCenter StorageScope:** A resource reporting tool that collects and analyzes usage data and other information from storage devices.

**Common Array Manager:** Displays how much storage is allocated to disk arrays and servers made by different vendors.

**WideSky:** A middleware application that controls the other tools and ties together information from various storage systems.

made it clear that they want the ability "to manage all the information across their enterprise, whether it's on EMC [disk arrays] or one of our competitors' platforms."

Included in the new suite are tools supporting data replication, collection of information about storage resource use and displays of how much data is allocated to different devices (see box).

The allocation tool "can go back and look at storage in the context of departments or or-

ganizations or applications or databases or file systems," North said. "You really begin to get storage management integrated back to the context that people would like to think about it — management of capacity and availability."

Jim Rothnie, senior vice president and chief technology officer at EMC, said the tools automatically recognize and begin monitoring new devices that get plugged into a SAN, eliminating the need to do manual setup work. ■

investments, said Jill Jenkins, an analyst at Current Analysis Inc. in Sterling, Va. Instead of doing big, long-term rollouts, Jenkins said, many companies are dividing implementations into segments to "solve individual pain points" and get quick returns on investment.

Hunt Corp., a Statesville, N.C.-based distributor of office supplies and graphics products, recently finished an upgrade to its MFG/Pro supply chain and enterprise resource planning (ERP) system from QAD Inc. in Carpinteria, Calif. The upgrade will let suppliers log in to the system to review their inventory levels at Hunt and send shipment confirmation notices, said Ted Raiman, director of supply logistics.

But those features won't be made available until next year, said Raiman, who's wrestling with a problem involving suppliers who misidentify items or fail to provide proper bar codes and labels — snafus that can have a big effect on Hunt's supply chain system.

"Our processes are mostly automated, and any [mistakes] put us into a manual mode, which slows down the movement of the materials, potentially creating production disruptions," Raiman said. Hunt has even taken to charging some chronic offenders \$250 to fix their errors, he said.

Kunkler said Idaho Power had hoped to complete by August its upgrade of procurement software from Pleasanton, Calif.-based Commerce One Inc. and ERP software from Atlanta-based Indus International Inc.

The delay is "probably a result of us not putting the appropriate resources on the project," Kunkler said. She added that the utility has had to hold off on adding suppliers of production materials to the system while work on the upgrade continues. ■

**Quick Link**

For more news and resources on supply chain issues, visit our Web site:

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## BRIEFS

## Worldspan, Compaq Sign Server Deal

Atlanta-based Worldspan LP signed a three-year deal to buy IT equipment from Compaq Computer Corp. for use internally and by travel agencies tied into its reservation system. Financial terms weren't disclosed. Worldspan, which already processes travel transactions on Compaq's NonStop Himalaya systems, said it will add the vendor's ProLiant servers for uses such as e-commerce and e-mail.

## Tighter Security Planned for Comdex

Key3Media Group Inc., which is organizing the Comdex Fall/2001 trade show, said it's tightening security for the event, being held next week in Las Vegas. Attendees will have to pick up their badges in person, carry valid photo identification at all times and allow extra time to get through security checkpoints, said Key3Media.

## Bush Opposes Kids Domain Legislation

The Bush administration objected to legislation that would force the Internet Corporation for Assigned Names and Numbers in Marina del Rey, Calif., to create a .kids top-level domain for children's content. Nancy Victory, an assistant secretary of commerce, told a U.S. House committee that unilaterally creating the domain would be "at odds with the global nature of the Internet."

## Short Takes

INTEL CORP. and Sunnyvale, Calif.-based ADVANCED MICRO DEVICES INC. cut the prices they charge hardware vendors for their rival high-end microprocessors. . . . IBM and MICROSOFT CORP. proposed an XML-based specification for describing the Web services companies offer and how users can access the services.

## Private-Sector IT Key In War on Terrorism

*Military calls on companies to help develop tools that cut through 'fog of war'*

BY DAN VERTON  
CRYSTAL CITY, VA.

AS THE WAR against terrorism has continued to escalate, the IT industry has increasingly found itself standing shoulder to shoulder with the military, providing technologies that are critical to eliminating battlefield confusion, known as the "fog of war."

"We're going to defeat terrorists," said Army Lt. Gen. James King, former director of the National Imagery and Mapping Agency, which is responsible for lifting the fog of war with digital mapping and imagery support. However, victory will require more investment in technology, and that rests with private industry, he said, adding, "It must have the full attention of industry."

IT is the "cornerstone" of the Department of Defense's plan to achieve what it calls "information and decision superiority" — getting the right information to the right people at the right time and in the right format, said Art Money, former deputy assistant secretary of defense for command, control, communications and intelligence and now a member of the board of directors at Mountain View, Calif.-based Silicon Graphics Inc. "That can only be achieved through a reaffirmation of the government/industry team," he said, speaking here at the first annual SGI Defense Summit.

Experts say today's IT industry is living up to the standard set by companies like New Orleans-based Higgins Industries Inc., which designed and built the boats that landed U.S. troops in Europe during World War II. Technology companies are supporting the war against

terrorism with high-performance computers, advanced visualization software, commercial imagery and database integration support.

"To fight the enemy, you have to visualize the enemy," said SGI Chairman and CEO Robert Bishop.

The Pentagon's immediate IT requirements include integrating its databases, acquiring geospatial data sets with more detail and higher resolution, and developing a conceptual data model that can facilitate the creation of interoperable

databases, said King.

"We will not achieve a true 'sensor-to-shooter' [network] until databases are interoperable," said King, referring to a problem that has dogged the Pentagon for years and may have had a hand in recent targeting mistakes in Afghanistan. Despite the use of precision-guided bombs, there have been several instances in which either stray bombs or targeting errors have resulted in civilian casualties, Pentagon officials have acknowledged.

For example, Red Cross food aid facilities were mistakenly bombed twice within two weeks. Pentagon officials said "human error in the targeting process" was to blame. Data-

base problems and human error also led to the accidental bombing of the Chinese embassy in Kosovo in 1999.

Part of the problem is that objects labeled as "unknowns" in one system have in the past been read as "enemy" in others, said Robert Hutten, deputy director for strategic plans and policy at the Defense Information Systems Agency, the Pentagon's network provider.

The Marines plan to develop portable unmanned aircraft that can transmit real-time digital video of targets to help avoid mistakes, but bandwidth remains a challenge, officials said.

"A lot of the requirements are not technologically doable" at the present time, said Hutten. "There's a lot of work for industry."

**Quick Link**

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## Visualization Supports Special Forces

CRYSTAL CITY, VA.

U.S. fighter pilots and the military's Special Forces are preparing for missions in Afghanistan and elsewhere using advanced visualization technologies that provide amazingly accurate virtual models of buildings, cities and terrain.

The Navy has deployed a 3-D visualization software tool developed by Bethesda, Md.-based Lockheed Martin Corp. called Tactical Operational Scene (TopScene) aboard several U.S. Navy aircraft carriers that are now supporting raids against terrorist targets in Afghanistan, experts said.

TopScene, which runs on commercial, high-performance computers designed by SGI, integrates real-world satellite imagery, handheld photography, and video with Digital Terrain Elevation Data to produce realistic 3-D pictures that are accurate to within less than 1 meter. Pilots and soldiers are able to use the system to fly or walk through a virtual representation of the exact location to which they are being sent to conduct operations.

"They order imagery like they do ammunition," said Bob Mace, an executive at Fairfax, Va.-based

Anteon Corp. who serves as deputy program manager for mission rehearsal at the Navy's TopScene program office in Patuxent River, Md. Mace demonstrated the system here at the first SGI Defense Summit, sponsored by SGI and seven other IT companies.

The system was also used during the 1999 war in Kosovo. And an imagery and terrain database of Yemen was built in only two days after terrorists detonated a bomb that nearly sunk the Navy destroyer USS Cole.

Mace said. Since then, TopScene 4000 systems, which run on SGI Infinite Reality high-performance computers, have become standard equipment on every aircraft carrier, Mace said.

Special Forces, which are operating on the ground in Afghanistan, have a 3-D urban visualization tool at their disposal called RealSite. Developed by Melbourne, Fla.-based Harris Corp., RealSite was used by security

forces to plan where to position monitoring equipment and personnel during the Summit of the Americas in Quebec in April. It has also been used to prepare for the Olympics in Salt Lake City and to study the aftermath of the Sept. 11 attacks in New York.

Harris developed the imagery database for the Olympics security planning in one week and produced virtual walk-through scenes of 3,000 buildings in New York in two days, said Joe Nemethy, Harris' RealSite product manager. Harris is currently working with the city of Orlando on security planning and with the Pentagon's National Imagery and Mapping Agency to produce models of every major port facility in the U.S., said Nemethy.

"Collaborative visualization" is the key to teamwork, said SGI Chairman and CEO Robert Bishop. He said these technologies could also benefit private industries, including the manufacturing, energy, medical and media industries.

- Dan Verton



ANTEON'S BOB MACE demonstrated TopScene at the Defense Summit.





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Continued from page 1

## New Rules

ulations to be drafted within a year that will set standards for customer verification and financial records production. And the government has nine months to develop a secure network to be used by firms to share information with federal authorities.

The financial services component of the antiterror law is primarily aimed at detecting money laundering. Banks that now track deposits of more than \$10,000 may be required to examine lesser amounts and pull together records quickly for investigators.

One challenge for banks, said Mark Loewenthal, chief privacy officer at Provident Financial Corp. in San Francisco, will be tracking international deposits, which currently get far less scrutiny than domestic transactions. Bank transaction systems may have to be reprogrammed to collect data when a wire transfer to an offshore account is executed, he said.

"We may have to increase retention of those types of transactions," said Loewenthal. "If we have to track all transactions overseas, that will become even more cumbersome."

Until the regulations are drafted, it's impossible to know exactly what will be required of companies. But based on the law's open-ended language, the extent to which systems will need to be upgraded could be substantial, according to analysts, corporate executives and industry groups.

### Costly Due Diligence

"The new law is going to put more emphasis on upfront, know-your-customer, due-diligence activities, and that's got a huge cost," said Breffni McGuire, an analyst at Needham, Mass.-based TowerGroup.

One provision in the law calls for a federally mandated minimum standard for verifying a customer's identity. It might not be enough anymore for a bank employee to take a

quick look at a driver's license before opening a customer account. Real-time verification of the license against public records may be required, along with the ability to scan and save copies of customer identity documents. Biometric requirements are also possible.

"Biometrics is a slow-moving train, but a train nonetheless. This may accelerate it," said Peter Browne, former head of information security at Charlotte, N.C.-based First Union Corp., who now is the head of New York-based Predictive Systems Inc.'s security practice.

Regardless, Browne warned that background checks and real-time communications are "going to add cost and time."

The law gives regulators a lot of latitude. But IT managers, such as Richard Snipes, vice president of technical services at Washington Mutual Inc. in Seattle, the nation's ninth-largest bank, can do nothing now but wait for guid-

ance. "The business unit will eventually make a decision on what's needed to meet that obligation," Snipes said.

Companies usually have a much better idea of what to expect from regulators. If not for the current crisis, this law would have likely taken years to pass, not weeks, and it would have been fully vetted at hearings and forums.

### Industry Support

Despite the uncertainty about the law's ultimate impact, it has won support from trade groups representing financial services firms. Industry groups expect to work closely with regulators, who as part of the rule-making process are required to seek input from companies affected by the law.

"While this is going to add some new regulatory requirements, we are willing to take on those requirements because we share the goal . . . of eradicating money laundering," said

## Enlisting Banks in the Fight

*The antiterrorism legislation approved by President Bush on Oct. 26 requires regulators to come up with rules to extend the "long arm" reach of authorities to pursue terrorists and money launderers. Based on the law's broad language, regulators will be writing new rules for financial services firms on these issues:*

### TIMELY RESPONSE

Financial institutions will get five days to respond to requests for information from authorities. That may seem generous, but it isn't necessarily enough time for a large multinational bank with many foreign business operations and disparate systems.

### VERIFICATION OF IDENTIFICATION

This sweeping, open-ended provision calls for minimum standards to determine customer identity. It's up to regulators to determine how this is done.

### CLEANING THE LAUNDRY

The law includes a range of anti-money-laundering provisions that will require banks to improve their ability to spot suspicious activity.

### BIRTH OF A NETWORK

The government will have nine months to establish a secure network over which financial services firms can file suspicious-activity reports.

Lisa McGreevy, director of government and public affairs at The Financial Services

Roundtable in Washington. That group represents the top 100 financial services firms. ■

Continued from page 1

## Stock Trades

citing the terrorist attacks on the U.S. and the fact that many brokerage houses and banks are focusing more on business continuity planning than on shortening settlement times. But not everyone is convinced that T+1 will happen by 2005—or at all, for that matter.

"I don't know if it's doable by 2005. There are going to be a lot of issues that will come up," said Steven Schutze, director of e-strategies at the American Bankers Association in Washington. "We're still rethinking things like the reliance on the infrastructure outside the financial services industry: telecommunications, airplanes and mail, things like that."

Schutze's concerns were echoed by other financial services IT managers who questioned whether 24 hours is enough time to correct common errors in a trade, such as misplaced decimal points or numbers, and especially

whether one day would be enough time to get systems back up and running in the event of another disaster like the Sept. 11 terrorist attacks.

The Securities and Exchange Commission is pressuring the financial services industry to clear and settle all trades within 24 hours. The last time IT systems were enhanced to speed up clearing and settlement was 1995, when processing time was reduced from five days to three.

Among other things, T+1 would reduce settlement risks and resolve open credit extensions created by waiting three days.

Clearing and settlement is a complex process that involves the seller and the buyer registering a transaction with a central clearing organization, such as The Depository Trust & Clearing Corp. (DTCC) or the New York Clearing House. The buyer and seller then have to reconcile their accounts, and any errors have to be corrected in a process that can involve half a dozen people.

"In a major disaster, being

forced to settle that day is a major issue," said Ed Alsberg, information systems operations director at the New York-based DTCC.

### Damaged Lines

The Bank of New York Co., which is the only major clearing firm that houses its operations in downtown New York, faced major difficulties getting trades settled after Sept. 11. The problems didn't involve settlement systems, but rather the transmission of settlement data through telecommunications lines that had been cut or damaged. As a result, the transfer of settlement instructions was slowed, according to Meridian Research Inc. in Newton, Mass.

"To get from T+5 to T+3, you hire more people. To get from T+3 to T+1, you really have to be automated," said Deborah Williams, a research analyst at Meridian. "I don't think it is one issue. There are hundreds of issues, some small and some large, revolving around ensuring that trades settle quickly and accurately."

One key technology hurdle facing settlement and clearing is straight-through processing (STP), a technology infrastructure and business processes that link brokerages, clearing-houses and banks. STP would provide a nonstop flow of information from trade execution to settlement.

Larry Tabb, an analyst at Needham, Mass.-based TowerGroup, said T+1 is "the right thing to do," but he added that STP issues have to be resolved first.

For example, Tabb said, U.S. firms need to link into an international TCP/IP network being established by the Global Straight Through Processing Association, a financial services industry group that focuses on cross-border securities transactions.

"The other issue would be creating a process around data efficiency—consistent customer databases and settlement instruction databases," Tabb said. "You need to create one system that repopulates that information in a master database." ■



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# Security ROI Calculations Pose Challenges for Users

*Business-oriented approach recommended, but meaningful measurements can be elusive*

BY JAIKUMAR VIJAYAN  
WALTHAM, MASS.

**I**NFORMATION technology managers who are looking to justify their security spending would be better off presenting the issue as a fundamental business problem instead of as a technical one, according to security analysts who spoke at a seminar here last month.

The business-oriented approach offers a way to demonstrate achievable returns on security investments and lets companies plan their security spending more strategically, the analysts said (see box).

But the problem, according to users, is that there aren't many obvious ways to measure

the ROI of security efforts.

"We have talked about how we're going to measure ROI with the finance people, and we haven't come up with any good measures yet," said Matt Kesner, chief technology officer at Fenwick & West LLP, a law firm in Palo Alto, Calif.

Fenwick & West learned the value of tightening IT security firsthand after its Web site was taken down by a virus earlier this year. The firm plans to increase its security spending by 100% next year and has also budgeted for regular audits of its security capabilities, Kesner said. "There's a realization for the first time that security has a direct bearing on the business," he added.

In most cases, security spending usually rises only after major incidents, according to a survey released in March by IDC in Framingham, Mass.

The toughest part about justifying investments is trying to assign a dollar value to the level of security needed to keep a company safe, said an IT manager at a major New York-based financial services firm who asked not to be named.

## Pulling Numbers From Thin Air

"The major problem right now is that we don't have a good feel for what the real risks are and the costs [that are] associated with these risks — so that any numbers we plug into [ROI] models would be pulled from thin air," he said.

One way around that problem is to stop viewing IT security as something that simply involves plugging holes, in-

stalling firewalls and reacting to the latest viruses, said Chris Wysopal, an analyst at Cambridge, Mass.-based @Stake Inc., which organized the seminar along with Bedford, Mass.-based RSA Security Inc.

## Justifying Security

**The emphasis of REACTIVE security is to:**

- ▶ Justify fear
- ▶ Restrict applications
- ▶ Emphasize prevention
- ▶ Apply technical solutions

**The emphasis of STRATEGIC security is to:**

- ▶ Justify ROI
- ▶ Enable applications
- ▶ Emphasize accountability
- ▶ Foster business and technical solutions

SOURCE: @STAKE INC. CAMBRIDGE, MASS.

Instead, Wysopal said, security should be presented as a central business issue that needs to be addressed at the start of IT projects.

Potential cost savings from that approach can be used to demonstrate ROI, Wysopal added. For example, @Stake's research shows that companies that focus on security issues during the project design stage typically spend 60 to 100 times less than businesses that try to fix problems during later implementation phases or after a system has gone into use.

Sean Nolan, CIO at online retailer Drugstore.com Inc. in Bellevue, Wash., said security-related investments should be looked at more as a cost of doing business than in terms of the ROI they can generate.

But no matter how security is viewed, "I think it's clear that focusing [on it] early is going to be far cheaper than the alternative," Nolan said. Putting that idea into practice, Drugstore.com has developed reusable procedures and code libraries for building security features into its systems right at the design stage, he said. ▀

# Users Eye Self-Healing Systems Management Software

*Automated tools for diagnosing network ills still maturing*

BY MICHAEL MEEHAN

To cope with applications that are greedy for IT resources and the rise in business being done online, some users are trying to make their server networks more flexible and self-healing. But analysts cautioned that system management tools designed to address the problem are still in their infancy.

For example, Cooper Industries Inc., a \$4.5 billion maker of tools and electrical products, is looking to ease its network performance issues by installing software from San Mateo, Calif.-based MetiLinx Inc. that monitors server func-

tions and automatically reroutes processing work to other systems if problems arise.

MetiLinx just added the rerouting capability last month, releasing a tool that's supposed to be able to optimize server performance across multiple tiers of a corporate network. Its software was previously limited to diagnosing server resource problems and recommending corrective actions to systems administrators.

Terry Klebe, chief IT officer at Houston-based Cooper Industries, said MetiLinx's iSystem Enterprise technology will replace a more piecemeal approach to systems monitoring and management that's based on a hodgepodge of tools.

Financial applications being used at branch offices are slowing Cooper's network due to a lack of available bandwidth, Klebe

said, adding that the problem is being compounded by e-business applications and a new data warehouse. The company's other option for a cure was to build three times the needed processing capacity for every new application, he said.

"We ran several scenarios on

that, and the [financial] numbers scared me," Klebe said. "Conservatively, we think we can cut new hardware costs 30% [using the new tools]."

Dan Kusnetzky, an analyst at IDC in Framingham, Mass., said most established systems management tools can't easily

handle the applications-driven performance problems faced by IT managers.

Users typically need to write custom scripts to work around server snares on their networks, Kusnetzky said. Only a few small vendors, including MetiLinx and Billerica, Mass.-based SilverBack Technologies Inc., have developed tools aimed at automating network optimization, he added.

Ed Wood, network administrator at the Tennessee Valley Authority (TVA) in Knoxville, said he's also trying to cope with the impact of bandwidth-hogging distributed applications. "The programmers are far less network-sympathetic than they used to be," he said. "They must think we've got unlimited resources."

Problematic applications create a ripple effect across the TVA's network, resulting in more potential points of failure that need to be closely monitored, Wood said. ▀

## Keep on Running

*Cooper Industries is looking to optimize its network server systems to prevent performance problems. The MetiLinx software that it's installing includes these features:*

- ▶ **System-level objects** that analyze the performance of each server and communicate that data to all the other linked nodes on the network.
- ▶ **Real-time process redirection** capabilities at each network node based on system-level object data and end-to-end availability of system resources.
- ▶ **Network management and planning** tools that can be used to set performance alarms on systems and to collect processing data for use in fine-tuning network infrastructures.





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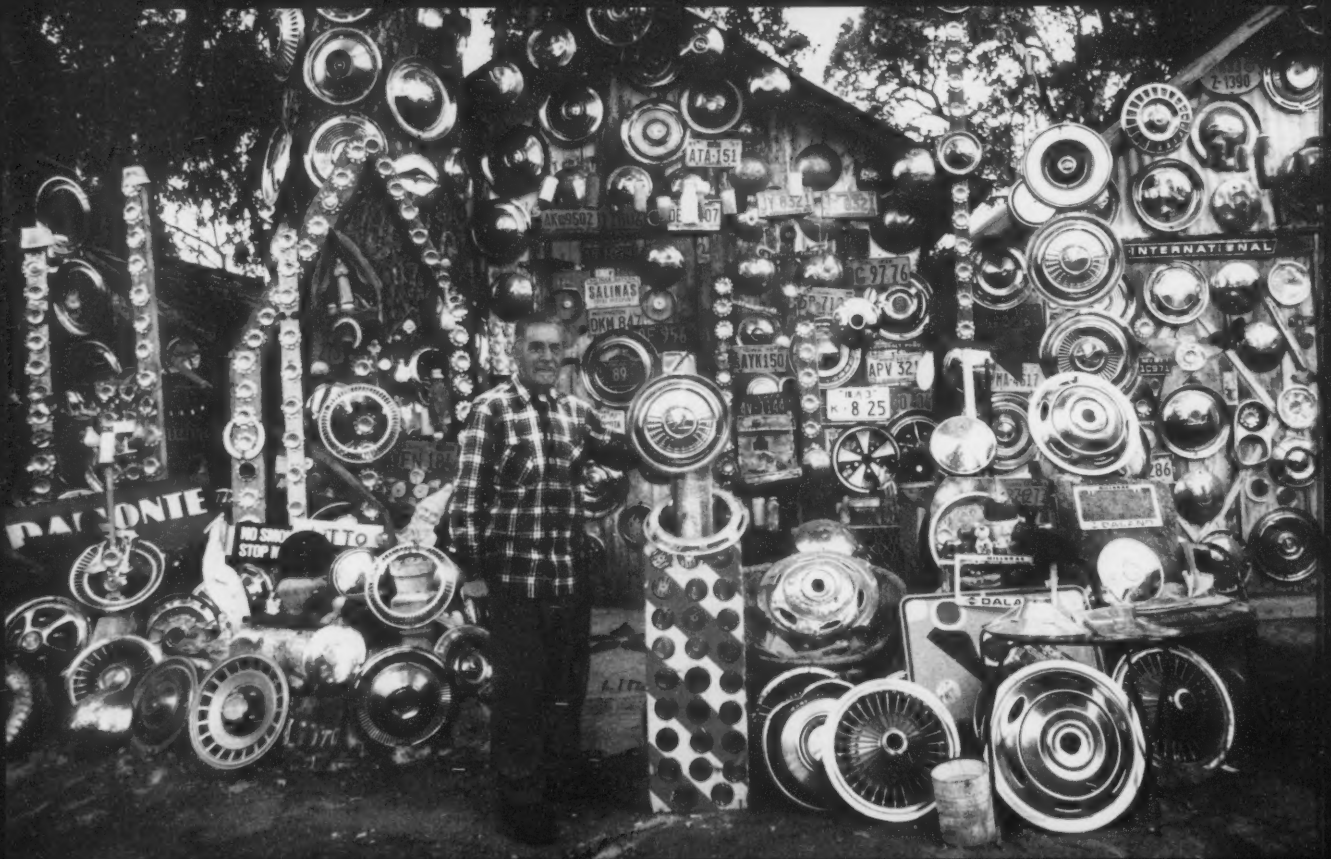


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**Exactly when did you stop  
buying Wintel servers  
and start collecting them?**



\*Based on customer inquiries consolidating Windows NT servers using PC Netics. \*\*Based on comparable 2- to 8-way, 750MHz configurations as of 9/4/01 and 10/16/01 (Dell). Essential configurations of all Dell, HP and IBM servers include the cost of MSN storage, all competitive & any configurations include the cost of MSN storage. All configurations are based on an architecture developed by Sun Microsystems, Inc. IBM is a registered trademark in the United States and other countries, exclusively licensed through X/Open Company, Ltd. Sun, Solaris, SPARC and Sun Fire are trademarks of Sun Microsystems, Inc. in the United States and other countries. Products bearing SPARC trademarks are based on an architecture developed by Sun Microsystems, Inc. IBM is a registered trademark in the United States and other countries, exclusively licensed through X/Open Company, Ltd.

## Over a dozen Wintel servers? Or one Sun Fire V880 server?

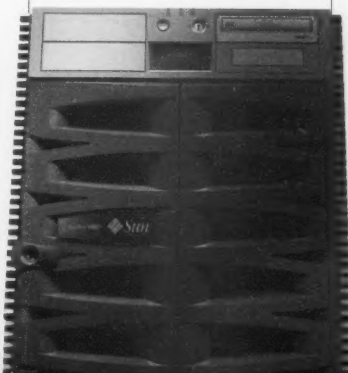
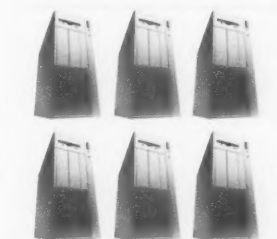
The servers keep piling up. You need more power to support your enterprise, but each Wintel server adds to your management complexity and overhead costs. And consolidation? Too expensive. Well, with the Sun Fire™ V880 server from Sun, our new 2- to 8-way, 750MHz entry server, you can afford to consolidate those dim-bulb Wintel servers and dramatically reduce the cost and complexity of your infrastructure. How good is it? Well, you can consolidate more than a dozen Wintel servers into a single Sun Fire V880 server.\* (No, it's not a typo.)

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Sun Fire V880	Proven Solaris	\$29,995	\$49,995	\$119,995
Compaq ML750	NT	\$45,307	\$66,741	N/A
HP L4000	NT	\$55,261	\$75,471	\$227,192
IBM x370	NT	\$48,305	\$61,635	\$183,851
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# Users Look to Harness PCs For Big Processing Jobs

*New distributed computing technologies target extra CPU cycles for supercomputerlike effect*

BY JAMES COPE

SOME LARGE COMPANIES that do heavy-duty data crunching are turning to new distributed computing technologies that tap unused CPU cycles from networked PCs. They hope to create the kind of processing power typically provided by supercomputers and server clusters.

Upgrades of distributed processing systems supporting scientific applications and other data-intensive programs were announced in the past two weeks by Austin, Texas-based United Devices Inc. and New York-based DataSynapse Inc. A third vendor, Entropia Inc. in San Diego, also sells such technology.

Brokerage and investment services firm Wachovia Securities Inc. has already found the distributed approach to be a big timesaver on financial modeling and analysis jobs for its fixed-income derivatives business.

Joe Belciglio, managing director of trading technology at the subsidiary of Charlotte, N.C.-based Wachovia Corp., said an earlier version of DataSynapse's technology is being used to grab extra processing time from 50 PCs. "We've

seen things that used to take two to two and a half hours cut down to 20 minutes," Belciglio said.

Belciglio wouldn't comment on what it cost to put DataSynapse's system in place but said the technology was generally more cost-effective than buying dedicated systems to do the modeling and analysis work. Using existing PCs also reduces infrastructure maintenance needs, he added.

DataSynapse's LiveCluster, United Devices' MetaProcessor and Entropia's namesake technology all include server-based software that manages software agents or client-level code installed on various PCs. The agents work in the background and don't slow down the primary user of a PC, according to the vendors (see chart).

## Different Approaches

Swiss pharmaceuticals manufacturer Novartis AG is testing the products made by United Devices and Entropia. Juergen Basse-Welker, director of global IT at Novartis, said the Basel, Switzerland-based company hopes to use "theoretically as many as 50,000" PCs on its networks to run biological

simulations and biochemical-compound profiling applications. But a big drawback is the lack of packaged scientific applications that have been designed to run on the distributed processing platforms, Basse-Welker said.

San Diego-based Accelyrs Inc. last week announced plans to adapt its scientific software for use with MetaProcessor. But Scott Kahn, a senior vice president at Accelyrs, said the PC-based distributed model won't replace the need for supercomputers and dedicated server clusters on applications that require massive amounts of processing involving a matrix of related variables. The distributed approach is best suited for computations that can be split into separate pieces, Kahn said.

Mike Swenson, an analyst at IDC in Framingham, Mass., said the financial benefits of the new technology are another uncertainty. United Devices plans

## How It Works

The MetaProcessor distributed computing technology developed by United Devices includes several different components that tap unused processing resources on PCs:

- 1 **Software agents** are distributed over a corporate network to desktop PCs.
- 2 **Systems or network administrators** schedule processing tasks from a central console.
- 3 **The agents** do background processing work using the extra CPU cycles on the PCs where they reside.
- 4 **A management server** connected to the network directs and monitors the work of the agents.
- 5 **A database** installed on a separate server collects and aggregates information processed by the PCs.

to charge \$250 per utilized PC for MetaProcessor, a rate Swenson said could be expensive for some companies if the technology is implemented on several thousand or more PCs. ■

## Scaling Systems A Priority for New Red Cross CIO

A month before the Sept. 11 terrorist attacks on the U.S., **Thomas Schwaninger** joined The American National Red Cross relief agency as its CIO. Schwaninger recently spoke with *Computerworld's* Todd R. Weiss about how the attacks have affected IT plans at the Washington-based organization.

### Q: What has changed for the American Red Cross since the terrorist attacks?

**A:** As I was coming in the door, I was thinking about what are the strategies, what are the long-term architectures [needed] to support our mission? Certainly, what we've seen in this case of Sept. 11 is the need to continue those strategies... in many of the ways we'd originally planned, but to add in [more] scalability.

### Q: What kinds of changes do you see being made to improve your IT redundancy?

**A:** Some of the things we're doing include testing selected portions of our

disaster recovery plans, building more capacity in our backup sites, and we're increasing security in our IT functions. We've also added a lot of capacity just in terms of existing systems to get scalability up to the order of five to 10 times what we normally see.

### Q: What other kinds of improvements will be made?

**A:** It also expands to applications we have that track the volunteers who are working on-site [at] a disaster, applications that track funding and gifts we provide to victims, [and] applications within our own logistics and control systems that make sure we're getting supplies to a disaster site. There's a whole range of applications that sort of support people behind the scenes, [and we're] making sure they are scalable and working — and also making sure that those applications are available to people in the field, wherever they are.

### Q: What about communications with disaster workers?

**A:** We've been working on alternative ways such as satellite-based, as well as things that are more traditionally deployed. Our general strategy on that front is to have multiple avenues, multiple pathways that people can use to get connectivity. We'll use whatever is available to use. ■

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# IBM Hopes Acquisition Will Boost WebSphere

*Purchase of CrossWorlds matches BEA's focus on enterprise application integration*

BY MICHAEL MEEHAN

IBM LAST WEEK TRIED to one-up application server software rival BEA Systems Inc. through a \$129 million deal under which it will acquire CrossWorlds Software Inc., a developer of enterprise application integration (EAI) technology.

IBM and San Jose-based BEA, the top two application server vendors, are both looking to redefine the terms of engagement by combining their products with EAI tools that let users tie together applications and business processes.

BEA released a set of Java-based integration tools tied to its WebLogic server in July. Last week, IBM said it plans to merge the EAI software of-

fered by Burlingame, Calif.-based CrossWorlds with its WebSphere application server.

The CrossWorlds and WebSphere products are already integrated through a partnership deal, and CrossWorlds built the messaging capabilities in its software on top of IBM's MQSeries Integrator middleware technology.

Now CrossWorlds will be directly used by IBM to harmonize internal business processes for users, said Steve Mills, senior vice president in charge of IBM's software unit. Future WebSphere releases will provide a central point of control for all applications within a company, Mills said.

Jon Derome, an analyst at The Yankee Group in Boston,

said IBM faces a stiff challenge in forming a cohesive whole from WebSphere and CrossWorlds. But there should be significant user interest if IBM can pull it off, he added.

"It really starts to change the

## CrossWorlds Software Stats

Key details about the EAI vendor include the following:

**Third-quarter financial results:** \$1.5M loss on revenue of \$21.7M

**Number of employees:** About 350

**Number of user implementations:** About 100

**Major customers:** Caterpillar Inc., Dow Chemical Co., Du Pont Co., Ingersoll-Rand Co., Whirlpool Corp.

competitive landscape in the application server market if they're successful," Derome said. "Customers will start wanting unified offerings, and other vendors will have to figure out a way to offer [them]."

According to a report released in June by Framingham, Mass.-based IDC, BEA had 18% of the worldwide application server market last year. IBM was next with 15.4%, IDC said.

Morgan Gerhart, an analyst at Meta Group Inc. in Stamford, Conn., said both IBM and BEA have the right idea in trying to leverage their application servers for EAI uses.

"What we see is that the application server really evolves into the next form of the operating system," Gerhart said. "That'll be your foundation, and then you get your business processes and [software infrastructure] built on top of it." But he estimated that it will take two to four years for vendors such as BEA and IBM to realize that vision.

IBM said it will fold CrossWorlds into its own business integration software division and continue technology investments planned for current users of the EAI tools. ■

## BRIEFS

### Comdisco Agrees to New Offer From HP

Rosemont, Ill.-based Comdisco Inc. agreed to sell its disaster recovery services unit to Hewlett-Packard Co. for \$750 million, three weeks after it dropped an earlier deal with HP in favor of an \$825 million offer from SunGard Data Systems Inc. that later became the target of an antitrust lawsuit by the U.S. Department of Justice. But Wayne, Pa.-based SunGard filed a motion opposing Comdisco's new deal with HP, which still needs to be approved by a U.S. Bankruptcy Court judge.

### Judge Lets Imation Sell DLT Cartridges

A California state court judge ruled that Oakdale, Minn.-based Imation Corp. can continue to sell its new Digital Linear Tape (DLT) cartridges pending the outcome of a legal battle with Quantum Corp., which owns the DLT technology. But the judge ordered Imation to pay a 30% royalty to Milpitas, Calif.-based Quantum on its cartridge sales.

### Compaq, CMGI Sign Deal on Debt, Venture

Compaq Computer Corp. agreed to restructure about \$220 million in debt owed to it by Andover, Mass.-based CMGI Inc. and that company's majority-owned AltaVista Co. and NaviSite Inc. subsidiaries. Compaq will receive \$82 million in cash and stock from CMGI and take over full ownership of Houston-based B2E Solutions LLC, a joint software venture with CMGI.

### Short Takes

Paris-based ALCATEL reported a \$502 million third-quarter net loss and said it plans to lay off 10,000 more workers throughout its European operations. . . . Farmington Hills, Mich.-based COMPUWARE CORP. named Tommi White as its chief operating officer.

## Sun Targets Low-End Server At Windows-Based Boxes

*Competition drives new marketing plan*

BY TODD R. WEISS

In a move that puts a new twist on its low-end server strategy, Sun Microsystems Inc. last week unveiled an entry-level Unix system that takes direct aim at machines running Windows on Intel-based hardware.

The Sun Fire V880 is positioned to go head-to-head with low-priced Wintel servers, Sun officials said. They acknowledged that increasing pressure from rivals offering those systems prodded Sun to take a

more overt marketing approach in the low-end niche.

"Sun has always had entry-level servers, but we haven't branded them that way," said Benjamin Baer, strategy manager for the company's volume systems products. "We are very much going to address this lower end of the market [now]. We're not going to back away [just] because there's a perception in the market that we're expensive."

The V880 starts at \$29,995 with two of Sun's UltraSPARC III processors and can support up to eight CPUs and 32GB of memory, according to Sun (see box). Prices top out at about \$120,000.

According to analysts, the new low-end strategy is aimed at helping Sun preserve its server market share at a time when IT spending has been dampened by the weak economy. The move follows a \$180 million loss that Sun suffered during the quarter that ended Sept. 30.

Adria Ferguson, an analyst at Giga Information Group Inc. in Cambridge, Mass., said Sun needs to change its reputation as "solely a high-end server vendor" in order to compete

more effectively against Intel-based server vendors.

Sun is "going to have to be increasingly price-competitive," said Jean Bozman, an analyst at Framingham, Mass.-based IDC. "If they end up being more expensive on an equivalent-type platform, then they're more in danger of losing market share to Windows/Intel [vendors]."

For users, the V880 adds more system resources and supports twice as many processors as were offered with Sun's earlier low-end servers, Ferguson said.

But one potential issue, she added, is that vendors often price applications based on the number of CPUs on a server. That could be a red flag for users, since Unix applications are typically more expensive on multiprocessor systems than Windows-based software, Ferguson said. ■

## AT A GLANCE

### Sun Fire V880

Sun's new entry-level server includes the following features:

■ Two to eight **750-MHz** UltraSPARC III processors

■ Memory capacity of **4GB to 32GB**

■ Up to **12 36GB** disk drives

■ Pricing starting at **\$29,995**



MARYFRAN JOHNSON

# National ID: Bad Idea

**I** WAS STANDING at yet another airport security checkpoint last week, arms held wide, patience fraying, while a stern-faced security guard pressed her metal detector all over me. Foiled again by an underwire bra, which apparently marks me as a suspicious subject for overtuned alarm systems. Five pat-down searches in three days of travel.

One effect of these close encounters was to spark a keener interest on my part in the clamor about national ID cards, which a majority of Americans support in the aftermath of Sept. 11, despite continuing opposition from the White House. Proponents of this politically charged idea claim that the ability to breeze through airports in the "fast lane" could be among the many benefits of such a Big Brother verification program. So I can certainly see the appeal.

Ironically, my travels were taking me to and from a computer security conference in Washington. What better place to see if technology is really up to the task of supporting a national ID card system? Turns out we're about 90% there, but that missing 10% is a serious gap. After talking with a variety of experts in biometric, smart card and authentication technologies, I found many who doubt that we can truly safeguard the personal data these cards would contain.

Hacking a smart card and spoofing a finger-



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print image will certainly raise the bar for the bad guys, but everyone expects them to rise to the challenge. One speaker from RSA Security noted that a \$5 rubber stamp was all his team needed to fake a fingerprint image.

In the end, I walked away opposed to a national ID card program. Beyond the concerns about civil liberties or the huge, costly bureaucracy it would involve, the technology implementation would be a never-ending nightmare of integration problems, security breaches, standards conflicts and constant patching of immature products.

Perhaps in a few years we'll be able to authenticate someone's identity through a smart card with a unique access code and a biometric identifier. But nobody produces such a triple-protected, tamper-proof product now. Until the technology can protect us, this remains a dangerously bad idea. ■



For a pair of opposing viewpoints, from Eddie Schwartz of Guardent and Stephen Hunt of Datastrip, visit our Security Community: [www.computerworld.com/q?at210](http://www.computerworld.com/q?at210)

PIMM FOX

# Managing the Multiple-IT-Worry Syndrome

**L**IFE WAS SIMPLE when we worried only about obvious, external threats. Now we feel exposed inside our borders, jumpy just opening snail mail.

Call it a multitude of worries.

This condition is all too familiar to IT personnel who must deal with the Code Red computer virus and its variants while also making sure data flows safely in and out of corporate networks.

Unfortunately, the initial line of computer security defense — running HTTP packets over SSL — guarantees the encryption of data from a Web browser to a Web server only. SSL and the decryption that takes place once a packet arrives at the Web server do nothing to protect the information stored inside a database.

You could put crypto cards on every server, utilize some kind of crypto function in the database (Oracle9i has a little-used encryption capability) or write a Perl script or C program encrypting all the data going into a database. But these approaches haven't gained widespread acceptance because they hurt performance or are expensive and complicated.

More disturbing is that many people charged with security still believe that data, once behind the firewall, is safe and secure.

Never mind that sleeper computer viruses or worms (Code Red or Nimda) might have already lodged themselves on servers and could be transmitting your files over the Internet. Or, more likely, that some rogue employee inside your company is e-mailing the company's entire database to a pal working for a competitor.

The risk isn't just that some nasty virus will somehow get to the database — the risk is that the information is sitting there in clear view. One way to solve the problem of viruses slipping through is to evaluate Web requests at the network level by determining whether they have a valid HTTP or HTTPS address. Ingran Networks has developed a box with software that matches distinct patterns of IP addresses, scanning along



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the way for Code Red and other viruses.

The box also addresses the internal threat by encrypting data flowing into the Web server, before it reaches the database. As a result, even if someone did manage to steal your entire database, he'd never be able to read it. The Ingrian product contains the private keys necessary to unlock the encrypting cipher.

By placing security at the network level, you'll still be able to take advantage of any application that uses SSL, such as an LDAP directory or Outlook, but your databases would now be encrypted. Network-level security may not eliminate multiple-worry syndrome, but it will make it more manageable. ▀

DAVID FOOTE

## Seizing Success From the Jaws Of Tragedy

"... it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness..."

CHARLES DICKENS was talking about the French Revolution in *A Tale of Two Cities*, but his words can easily be applied to life in America after the terrorist attacks.

For those able to get beyond the more disturbing aspects of the tragedy, there have been incredibly positive accounts of people overcoming adversity and of companies showing strength.

It's been one big jumble of paradoxes these past

several weeks. Many people have been questioning basic beliefs and assumptions that had seemed rock solid. So it's the right time to be thinking out of the box and being fearless in pushing some of your best IT-infused ideas and solutions for your company.

Not convinced? Then consider the following: More and more these days, managing change requires a significant event or common threat around which to rally the troops. The



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problem is that it's no longer enough to just use competitors, market conditions, data insecurity or a fear of losing your job as the bogeyman. You need something more compelling, something positive and even emotionally uplifting to which a lot of IT and business workers can relate. And it doesn't necessarily have to be strictly business- or IT-

related either, just motivational and sustainable.

It's time to act boldly. We've long needed something more dramatic than a sour economy to jolt us out of corporate complacency, fear of change and just plain poor leadership. That something arrived on Sept. 11. I can't tell you what to do, but here are a few winning, immutable truths for managing businesses and people that I've culled from observing those who really seem to get things done:

■ **Character and ethics matter.** How we handle ourselves and treat others counts more than ever in everything we do. Ethical issues aren't simply about right and wrong; they're also about making tough choices in a brutal world. In making decisions, your superiors, customers and peers take character and ethics into account far more than you realize.

■ **Transition issues need more mind share.** Being the smartest and hardest working is vastly overrated when it comes to survival, according to Charles Darwin, who observed that responding well to change is the real success factor. Business leaders are notorious for undermining change initiatives

by failing to anticipate who will have to let go of what, or to adequately prepare their workers for the psychological and emotional adjustments needed in new situations.

■ **Measure it; market it.** If it can't be measured and tracked, how can you expect to sustain the precious support you've generated for a great idea? Not everything is easily quantified, so have some exceptional sales and marketing talent on your IT team to help with the analytical nitpickers who love to sabotage good work.

■ **Practice enterprise project management.** I introduced this in a previous column [News Opinion, Sept. 3] as arguably the No. 1 core competency for managing Information Age business realities. Learn it, and use it (when it makes sense). It's the enabler for repeating what works, reducing risk and complexity and predicting outcomes.

■ **There's never a clear answer.** Learn to tolerate ambiguity, and you'll never feel too afraid to take a risk. Accept occasional failure as a natural event and never stop moving forward and trying new things. ▀

## READERS' LETTERS

### Does Publicizing Vulnerabilities Help Hackers?

EVEN THOUGH Microsoft has been slow to fix security holes and even slower to properly design security into its operating system architecture, it does have a valid point: You should never publish how to beat a security system ["Microsoft: Loose Lips Give Hackers Tips," News, Oct. 22]. You can send that information to the development team, but don't leave it in the open for some malicious person to exploit. You can publish the vulnerabilities without showing how to create the worm. You can tell people how to protect themselves until a fix is applied. Just because Microsoft-bashing is in vogue doesn't mean that all of us with Microsoft operating systems should be put at greater risk by giving the malicious few a step-by-step manual for corrupting our servers and PCs.

**Kirk Beadle**  
TRW Automotive  
Livonia, Mich.

THE IDEA that the security community shouldn't make code vulnerabilities known to the users of Microsoft products is absurd to the point of idiocy. As usual, Microsoft shows its true colors: more interested in protecting its image and limiting blame than providing defect-free code. Until Microsoft grows up to quality code, every effort should be made by security firms to keep user support organizations aware. In this way, the IT department may take steps to protect its customer communities from Microsoft's shortcomings in code quality.

**Bud Byrd**  
Lewes, Del.  
[budbyrd@attglobal.net](mailto:budbyrd@attglobal.net)

THOSE WHO publish vulnerability exploit code hide behind a thin veil of public interest and tread perilously close to seeking to garner attention. Giving credit in patch re-

lease notices for assistance in reproducing or correcting problems provides a healthy form of attention. Published exploit fragments should be small enough to illustrate the point to an experienced software professional without providing a virus kit to aspiring hackers.

**Frank Baker**  
Vice president  
Monitoring Automation Systems  
Irvine, Calif.

THIS IS another case of refusing to take responsibility for one's actions. If Microsoft spent more time developing secure and verifiable standards-based coding and testing procedures, then maybe far less of its software would come back to bite it.

**John Cowan Jr.**  
IT manager  
Caldwell Industries Inc.  
Louisville, Ky.

### A Slur Against Turkey

I WAS APPALLED to see Turkey included on the map of global IT

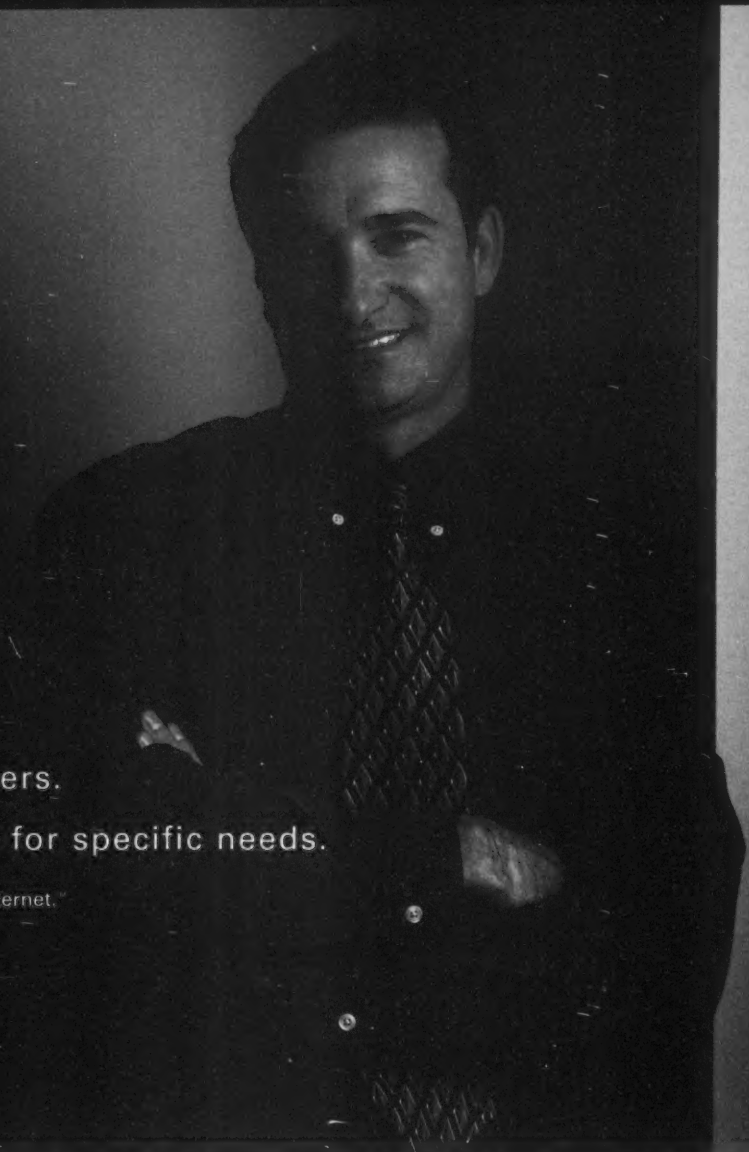
security threats ["Volatile States," Business, Oct. 22].

From the IT point of view, Turkey is no different from any other European country. From the security point of view, it's not a less secure place than Yugoslavia, Greece, Iran or Pakistan, which were not highlighted on the map. Turkey and the Turkish people have always supported the U.S. and democracy at very high cost to themselves.

**Dr. Orhan Karaali**  
Clearwater, Fla.

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: [letters@computerworld.com](mailto:letters@computerworld.com). Include an address and phone number for immediate verification.

**Quick Link** For more letters on these and other topics, visit our Web site: [www.computerworld.com/qc5000](http://www.computerworld.com/qc5000)



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# BUSINESS

## THIS WEEK BATTLING BANKRUPTCY

Working in IT for a company that's going through Chapter 11 can be fraught with anxiety and extra work to meet regulatory requirements. But there are money-saving steps IT managers can take to help their organizations regain their financial footing. **PAGE 30**



## HOW TO BECOME YOUR COMPANY'S FIRST CIO

Does your CIO-less company need one? Are you just the person for the job? CIOs such as Deere & Co.'s Kirk Siefkas (pictured) offer advice about how to persuade the CEO to create the job and offer it to you.

**PAGE 32**

## CLONING THE CIO

CIO job-sharing is still rare, and it can offer distinct advantages and challenges. Ameritrade co-CIOs Mok Choe and Raymond Dury give their advice on how to make it work. **PAGE 34**

## DRAFTING A COLLABORATIVE PLAN

Architectural firms might not be as technologically savvy as brokerages or retailers, but some forward-looking outfits are beginning to invest in collaborative technologies like VPNs to tie together far-flung associates and work together on projects more effectively. **PAGE 39**

PAUL A. STRASSMANN

## Transforming IT

**W**E'RE AT THE END OF CORPORATE COMPUTING as it has been practiced for the past 50 years. From now on, billions of computers will only be network peripherals. Corporations will stop building and maintaining their unique hardware and software capabilities as fixed costs.

Most information-processing capabilities will be passed on to computing utilities that will charge for services as a variable cost — much like telephone service. IT budgets will gradually move from being a vulnerable overhead expense and become a direct cost of operations, like labor and materials.

IT vendors have figured out that this new environment alters the economics of how to reap extraordinary profits. Selling software or shipping equipment doesn't offer any more of the profit growth that, until last year, justified stratospheric market valuations.

For instance, until last year, the five-year average profit growth for Microsoft, Oracle, Sun and IBM was 46.7%, 70.2%, 39.4% and 20.6%, respectively. To prosper, new sources of revenue will be necessary as corporate purchases for IT level off in the coming years. Consequently, Microsoft (with .Net and Hail-Storm), Sun (with Sun ONE), Hewlett-Packard/Compaq (with e-Speak), Oracle (with Dynamic Services) and IBM (with WebSphere) have all announced that they expect their major future revenue growth to come from services.

Dominant vendors will be in a position to make the case that shifting from locally grown corporate solutions to industrial-strength application services reduces the risks now inherent in corporate IT management. The condition of corporate software assets has now reached a state of sufficient chaos that corporate executives are ready to welcome the takeover of IT by giant firms that will promise delivery of application services at predictable prices. The evidence of the vendors' intent can be found in their announcements. Their new services will displace the current practice of purchasing packaged software that subsequently requires spending huge amounts of money on integration, maintenance and upgrades. The vendors have promoted the new services as a cost-avoidance opportunity and have appealed to corporate management to purge their homegrown programs and replace them with standard applications. The vendors are also proposing to deliver

the software as a guaranteed subscription service, making a vendor's network an extension of every corporate network. Once you're hooked up, the vendors will deliver online enhancements for continuous technology refreshment.

The vendors also plan to offer application-integration services that promise the interoperability of applications within a corporation, as well as among suppliers and customers — desirable objectives that few, if any, large corporate IT departments can deliver now.

What will most likely happen to vendors' software revenues? They'll account for at least 40% of IT budgets over the next 10 years, up more than threefold from the current 12%. In effect, the vendors' traditional role of supplying information armaments will transform into a role of being mercenaries participating in information-based confrontations with those users' competitors.

**Implications.** This shift is proceeding at an unstoppable pace. It will alter the existing roles of corporate IT staffs, which will be asked to concentrate on making computer expenditures profitable.

This development will lead to a decline in the size of corporate IT staffs and a substantial reduction in corporate capital devoted to IT. To keep their jobs, a large part of the remaining IT staffers will have to augment their skills in managing improvements in business practices necessary to keep up with global information-based competition.

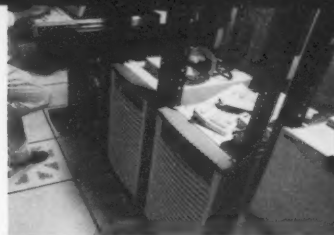
But vendors must address two issues before they can start displacing the people who have been their most loyal customers: Can the vendors deliver their goods with sufficient reliability? And can service vendors offer sufficiently secure networking environments? The question of security is the choking limitation on the pace at which the transformation to services may proceed. If the vendors can't guarantee protection against a wide range of risks, you may want to wait before handing over the keys to a source you can't trust. ▀



PAUL A. STRASSMANN will continue to write about risks to our information infrastructure in future columns. Contact him at [paul@strassmann.com](mailto:paul@strassmann.com).

**You're about to stick your neck out on a**





server decision that will finally update your data center. The problem is, it's hard enough predicting what will happen next quarter, let alone next year. So how can you be confident that the infrastructure choices you make today are choices you can live with tomorrow?

One option now has to include the new HP server rp8400—a rack-optimized breakthrough designed specifically to help you manage the enormous infrastructure demands generated by today's constantly evolving business environment.

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Infrastructure: it starts with you.







KEN BRAME, CTO at Marketmax, helped craft the plan that eliminated his position after Service Merchandise entered bankruptcy.

## Reorganizing Yourself Out of a Job

Bankruptcy is a wholly different experience at the CIO level than it is for IT workers in the trenches.

Ken Brame, a former CIO at Service Merchandise Co. in Brentwood, Tenn., helped write the reorganization plan that eventually took away his job.

Chapter 11 protection meant the retailer was entering a period of IT maintenance without many new initiatives, Brame says. As a result, an IT leader with years of experience in large, complex projects was no longer necessary.

"We determined that there was a level of management they didn't need. They didn't need a Ken Brame," he says.

A "nice" severance package allowed him to plan to take six months off after leaving, he says. But a job offer to become chief technology officer at Marketmax Inc., a retail software vendor in Wakefield Mass., cut his break to a few weeks.

Meanwhile, the staff at Service Merchandise plummeted from 275 to about 150 through attrition, unfilled vacancies and a few layoffs of 40 to 50 people at a time.

"When you're part of the process, it's different than if it's done to you," Brame notes.

— Kim S. Nash

Job cuts, canceled projects, unfamiliar work requests. Doing IT work during bankruptcy proceedings is unpleasant, but some teams have found ways to help their companies. By Kim S. Nash

# Staying A

**A**S A COMPANY WADES through Chapter 11 bankruptcy protection or gradually withers, IT professionals help keep the organization on life support. They struggle when new projects die and spending money shrinks. They get depressed. Anxious. They wonder, How long will I be employed?

Meanwhile, IT workloads can double at companies that file for Chapter 11 because of the extra financial reporting the courts demand.

It isn't all bad all the time. A smart IT group can lead efforts to save the company much-needed cash. Chapter 11 laws, for example, allow companies to ditch unfavorable vendor contracts.

Yet doing IT work during bankruptcy is mostly a somber march toward... uncertainty.

"You're in limbo all the time," says Dan Mushrush, recalling his time as director of new technology at Service Merchandise Co., a Brentwood, Tenn.-based retailer.

Mushrush, who's now an instructor at technology educator EpicEdge Inc. in Austin, Texas, quit Service Merchandise before it entered bankruptcy protection in March 1999. But things got bad even before the papers were filed, he says. For example, the performance of Service Merchandise's Web site suffered because the company wouldn't buy new Unix servers when needed, Mushrush says.

"You want to do things, but can't afford to. They're tight with money," he says. "You're making do."

Danny Schunk, vice president of IT at Service Merchandise, says that's changed. The company's still in Chapter 11 but continues to enhance its Web site and proceed with other forward-looking projects.

Schunk plans to rewrite e-commerce applications in Java this year, for example, and says Web sales are "significant" for Service Merchandise, though he declined to quantify that claim.

"It's a very uncertain economic environment, so we have to stay focused on the things that we can do to help make this company successful," Schunk says, explaining the retailer's current IT mandate.

Many firms sink into bankruptcy protection because of mismanagement or a falling market for their products or services. No one knows when or if the company will pull itself together. And that's tough on

IT people. The jagged emotions of the staff are a big reason why IT teams often don't accomplish much in a financial crisis, says Judy Newdom, former CIO at Bradlees Inc., a defunct retailer.

"People who were expecting new equipment aren't going to get it. People expecting new training aren't going to get it. It becomes a very tension-filled environment," says Newdom, who was CIO from 1993 to 1995, the year Bradlees filed for Chapter 11 for the second time. "People go around thinking, I better protect myself before I'm out on the street." The company shut down its 105 stores early this year.

Newdom, who's now a consultant at IBM in Tampa, Fla., says she quit Bradlees because the company stopped funding the client/server work that excited her. "It was depressing," she says.

### Just a Phase

In some cases, Chapter 11 doesn't signal failure; rather, it's a tool to protect a company from big debts.

USG Corp., a 99-year-old building materials maker in Chicago, has had to put aside \$1.2 billion for claims it may have to pay related to 250,000 asbestos liability lawsuits it faces. Yet USG's Chapter 11 filing in June automatically suspended the suits while the company waits for a bankruptcy judge to rule on its corporate reorganization.

Chapter 11 "is just a phase we're going through," says CIO Jean Holley.

New IT projects, including installing Oracle financial applications and planning a Microsoft .Net strategy, continue to roll on.

"You don't mothball your projects. You can't. Your competition's not sitting still. We have every intention of being 100, 101 and 102" years old, Holley says.

Whatever the cause, Chapter 11 companies typically do nothing quickly. Proposals to spend money on projects outside the ordinary course of business are reviewed by internal and external lawyers, the bankruptcy judge and key people or companies the firm owes money, says Kyle Barry, a lawyer at Jenkins & Gilchrist PC in Chicago.

If anyone objects, there are briefings, then hearings, then the judge decides, says Barry, who specializes in IT litigation. "It can take some time," he says.

Crown Books Corp., for example, had to get court approval to offer bonuses to 46 key employees — including eight IT staffers — to get them to stay while the company wound down operations last spring. Several of Crown's creditors objected, saying the retention plan wasn't cost-effective. A Delaware bankruptcy judge ultimately approved Crown's plan, but the process took two weeks.

And at Maidenform Inc., it took almost a month to get court approval to outsource mainframe operations and legacy application maintenance when the company was in Chapter 11 in 1998.

Skittish vendors can also hamper IT progress, says Chuck Codling, CIO at Bayonne, N.J.-based Maidenform. "The single greatest difficulty when you're in Chapter 11 is no one wants to sell you anything," he says. A handful of PC hardware, PBX and telephone-switch suppliers, which Codling declined to name, refused to do business with Maidenform in 1998 and 1999. They feared not getting paid.

While other vendors were understanding, some forced Maidenform to pay upfront, he says. "They

## Tips From Bankruptcy Experts

*The IT department can take some steps to save money quickly when a company is in Chapter 11 bankruptcy protection.*

- Rewrite or drop vendor contracts. Hardware leases in particular can often be renegotiated favorably.
- Be scrupulous about obtaining ROI on IT projects. Do nothing that doesn't promise payback within three to six months.
- Likewise, take on projects with quick implementation times. Chapter 11 is no time to pitch an ERP gig.
- Choose projects that can be funded with cash, not those that rely on equipment depreciation or amortization.
- Consider second-tier telecommunications providers. They aren't as large as AT&T or Sprint, but they can often provide the same service levels at a lower cost.
- Conscientiously reuse equipment. Plan where to redeploy servers before buying new ones.
- Though layoffs are unsavory, think about which IT positions can be cut. Personnel costs are typically the largest part of an IT budget.

waited for the checks to clear before you got your stuff," Codling says. "It slows things down, and it dilutes your efforts. You'd rather be concentrating on the project and getting it done, but you can't."

Still, IT operations can be something of a shining spot for a company in otherwise dark days.

The two outsourcing contracts Maidenform struck during its Chapter 11 days saved the company at least \$251,000 per year combined, according to court filings. That doesn't count savings it achieved by eliminating nine IT positions made obsolete by the deals.

In July, Columbia, S.C., waste management company Safety-Kleen Corp. was able to end leases with IBM on 6,113 pieces of hardware. Getting court approval took a month, and Safety-Kleen had to send the proposal to 329 interested parties. But according to court papers, the company expects to save \$4 million.

Indeed, after the initial sense of Chapter 11 despair ebbs, IT professionals should act fast to cut costs, says Joe Szmazinski, a principal at turnaround firm Jay Alix & Associates in Southfield, Mich.

If the IT staff pitches smart projects with quick payback, the group can actually gain in stature and respect, Szmazinski says (see QuickLink below).

"The most important thing any leader in IT can understand is that restructuring is a terrific opportunity," he says. ▀

**Quick Link**

Learn what to expect when an IT turnaround expert gets called in at a company that has filed for Chapter 11 bankruptcy protection: [www.computerworld.com/q724364](http://www.computerworld.com/q724364)

live

# BE YOUR COMPANY'S FIRST CIO

LATE LAST YEAR, John Dell'Antonia sat down with his boss, the company's chief operating officer, for an annual review.

As vice president of MIS at OshKosh B'Gosh Inc., Dell'Antonia had met all of his goals and eagerly outlined more for the coming year. The IT department was doing well, the \$453 million clothier thriving.

What about making me CIO? asked Dell'Antonia, who had been at the OshKosh, Wis.-based firm for a decade.

Not happening. The 106-year-old company has just three C-level positions — CEO, CFO and COO. It has never had a CIO and didn't see the need to change Dell'Antonia's title.

Dell'Antonia says he wasn't devastated. "I would like it, but if they're not comfortable with it, I'm not going to go out on some major huge campaign to change that," he says. "What's important is that I'm an officer of the company. I can commit the company and sign contracts. I have a lot of authority. That's the key to getting my job done."

If you think your company needs a CIO and you want to convince your boss that you're the person for the job, CIOs say you should emphasize that an internal candidate knows more about how the company works — what's

politic, what's not — than any outsider. Outline for the CEO how appointing an equal to represent IT at strategy meetings can move the company that much faster to where the CEO wants it to go. When they're good, CIOs can manipulate hardware and software into yielding real business results.

Typically, an IT manager who isn't a CIO isn't let in on company plans until after they're final. A CIO, however, is part of the team that creates strategy. He may even lead strategic thinking.

John Boushy, CIO at Harrah's Entertainment Inc. in Las Vegas, came up with the idea to keep a database of all of the casino's customers to help Harrah's outmarket its rivals. Now no major casino can stay alive without that technology. An IT manager who is handed marching orders after the fact isn't likely to make such a mark.

"The people I see who are in top IT jobs but are not the CIO are still running the back-room operations and building products at someone else's request," says Bob Kramer, CIO at The Profit Recovery Group International Inc. in Atlanta.

To move beyond that role, identify a business problem — talk to a line manager for ideas — and figure out how to fix it with hardware and software.

Then do it. And present the results to top managers, Kramer advises.

"Be a real change agent inside the organization," Kramer says, "as opposed to developing an application around someone else's thoughts."

Preston Bradford agrees. Until a recent promotion, Bradford was the first CIO at Sapient Corp., a \$503 million IT consulting firm in Cambridge, Mass. To get the attention of top managers, he says, you have to know what they're looking for. For example, if you just installed a virtual private network (VPN) and want to publicize the success, remember that VPN doesn't mean anything to business people. "But if you say, 'We've taken \$1 million out of our cost structure and enabled employees to work 25% more effectively,' now you'll get their attention," he says.

You may also want to point out that creating the position of CIO seems to be a smart financial move for a company. Firms that announced new CIOs found that the news triggered an average 1.2% increase in stock price, according to a study of 96 such companies published in the March issue of *MIS Quarterly*. One percent isn't a major jump. But the rise signals that stockholders "recognize the current and future importance of... effectual

How to convince your CIO-less company that now is the time to create the position — just for you. **By Kim S. Nash**

IT leadership," the study notes.

By far, most new-CIO slots are filled with people from outside the company. Just 35 of the 96 companies in the study filled the position internally.

Internal candidates are often ruled out because top executives, in taking the big step of creating a position that is new and different, believe they need someone new and different, says Marc Rubinger, CIO at Genesis Health Ventures Inc. in Kennett Square, Pa.

Rubinger advises brutal self-assessment. "Maybe you're not a CIO person to begin with," he says. "Maybe you need to look in the mirror and say to yourself, 'Just as I'm not qualified to be president of the United States, I'm not qualified to be CIO.' Everyone has to face that as they grow up."

Some would say that after an IT manager is at a company for five or seven years, the facts are plain: The company doesn't want a CIO or doesn't believe its current IT manager is CIO material.

But Cathie Kozik defied that thinking. In September 2000, she was promoted to the new CIO slot at Tellabs Inc. after eight years at the company, a \$3.4 billion communications equipment provider in Lisle, Ill.

The path to promotion was roundabout, Kozik says. First, Tellabs created the title of vice president of global information services, which she got right away. But then company executives decided that IT deserved even more senior-level attention and status and got approval from the board of directors to create the CIO slot.

Yet Kozik didn't apply for the job. She wondered whether she was ready.

"I can understand that there's a concern: Can the incumbent make that transition from being a tactical person as head of IT, to seeing the bigger picture as CIO? Personally, that was one of my concerns," Kozik explains. "Was I the right person? Could I make that transition fast enough to benefit the company?"

After nine months of helping interview external candidates, Kozik decided to go for the job herself and was accepted immediately. Her insider experience at Tellabs ultimately helped her. "Nine months of candidates from the outside could understand the technology but didn't understand who we were and how we work," she says.

The lesson: Play up internal know-how. Unlike someone who hasn't worked at the company, she says, "you don't have to go in and learn the culture and how things work together to make a system at the company." ■



EVERY COMPANY needs a "steward of information," says Deere's Kirk Siefkas.

## CIO in Six Months

Not every company has a CIO, but many have top IT managers pining for the position. The title is a recognition they feel they're due or a higher station to which they aspire. Getting the company to come around is sometimes a delicate task. But it's important, says Kirk Siefkas, who in June became the first CIO at Deere & Co.

"Every company that has plans and aspirations needs to have someone who is a steward of information and how it is used throughout the company," Siefkas says.

Though Siefkas says such a steward can be anyone in IT management, it's usually a CIO who has the vision.

Siefkas is an unusual case. he was named CIO after spending just six

months at Deere, a \$13 billion, 133-year-old farm equipment maker in Moline, Ill. He went to work at Deere in January as vice president of e-business, having joined the company from DiamondCluster International Inc., a Web consulting firm in Chicago. The two companies had been working together on e-commerce projects.

Even before Siefkas started working at Deere, company CEO Bob Lane cited him in an industry speech.

That exemplifies what several first-ever CIOs say is their most important piece of advice: Impress senior managers. Stop using technology acronyms, and start talking about how IT can help reach business goals.

— Kim S. Nash

## JUST THE PERSON FOR THE JOB

Steps to take to create your own CIO role

1

### Act like a chief.

Learn the business problems of your company's 20 biggest customers, says Cathie Kozik, the CIO at Tellabs. Then seed conversations with top managers with two things: that information and suggestions about what IT can do to help the company help those customers solve their problems.

2

### Fit in.

A would-be CIO's education level and social status usually must match those of the other top executives, according to Bob Kramer, the CIO at The Profit Recovery Group. "We can say that we don't want those things to be true, but they're there," he says.

3

### Recognize when to strike.

Your company may not be ready for a CIO, even if you are. If you're the IT manager and you would have to lobby for the creation of the CIO position, "don't do it," says Marc Rubinger, CIO at Genesis Health Ventures. "The most senior IT person is going to be viewed as having selfish motives. It has to come from the board or CEO."

— Kim S. Nash



After Capitol One Financial Corp. in Falls Church, Va., recently decided to scrap its experiment with co-CIOs, Computerworld's Mark Hall thought it would be worthwhile to check on how a similar management structure is working at Omaha-based online brokerage Ameritrade Holding Corp. Here's the exchange between Hall and co-CIOs Mok Choe and Raymond Dury.

**What prompted Ameritrade to create the dual CIO role?**

**DURY:** Over the past several years, Ameritrade acquired six different technology divisions through either acquisitions or special independent initiatives. Those separate divisions are now all under Ameritrade Technology Group (ATG), reducing expenses and leveraging synergies.

This was evident when developing and releasing the Ameritrade Advantage product suite featuring the Advanced Analyzer and Super StreamMachine, to name a few. The Advanced Analyzer technology was derived from our BigEasy technology, while Super StreamMachine advancements were from our recent TradeCast acquisition.

**CHOE:** To continue enhancing the focus on the client experience, and offer a highly efficient and scalable system, and integrate the acquired new technologies requires a specific set of skills.

Raymond's background is more in financial services technology. In fact, Raymond was instrumental in the development of OnMoney's portal technology, including account aggregation, while my IT background is more focused on creating and implementing brokerage applications; I helped in the development and optimization of Ameritrade's high-performance technology trading platform.

**DURY:** Having two experienced co-CIOs will allow us to meet the technology expectations of our clients quicker and with more efficiency for our shareholders. [Ameritrade CEO] Joe Moglia recognizes this and our specialized IT backgrounds and therefore created the dual leadership position.

**How is it structured? That is, who has what primary responsibilities? Was it divided by technical expertise? Management experience? Both? Has anything changed since you began working together in this role, and if so, why?**

**DURY:** We have equal responsibility for all of ATG. Our relationship is



"WE HAVE LEARNED that keeping each other informed is most important. If it does anything, it builds trust," says Ameritrade co-CIO Raymond Dury (right), pictured with co-CIO Mok Choe.

# Cloning The CIO

## WHO ARE THEY?

**Mok Choe and Raymond Dury** have served as co-CIOs at online brokerage Ameritrade since a major management restructuring at the company in June.

based on trust, the only way a partnership like this will work. We tend to manage those items where our skill sets and experience will benefit Ameritrade the most.

## To whom do you report? Has that relationship changed over time?

**DURY:** We both report to Joe Moglia. ... Our relationship with Joe has not changed.

**CHOE:** It's great having another CIO to bounce ideas off of who may have a different perspective. With a company that's so technology-dominant like Ameritrade, we talk and think through all major technology deci-

sions together. This ensures that Ameritrade makes the right technology decision from the start.

## What are the benefits of the shared role?

**DURY:** We draw on our combined experiences, knowledge and skills quickly to address technology issues and capitalize on insights from the business. We can focus on a project and still be confident that the day-to-day [activity] is working well.

## What are the challenges?

**CHOE:** We are fortunate not to have many personal challenges, so we are focusing on the business/technology challenges. They will keep us busy.

**DURY:** We've truly created a team environment in ATG. Based on our individual backgrounds, we both address a situation with different ideas that seem to become incorporated into its solution.

## How often do you two meet to discuss issues?

**DURY:** As Mok said, we value getting each other's perspective. We talk on the phone at least once a day. We usually get together once a week to discuss longer-term issues.

## Given that you both have had the shared role for a while, what are the key lessons that you have learned? Are there any anecdotes that either of you can share that underscore those lessons?

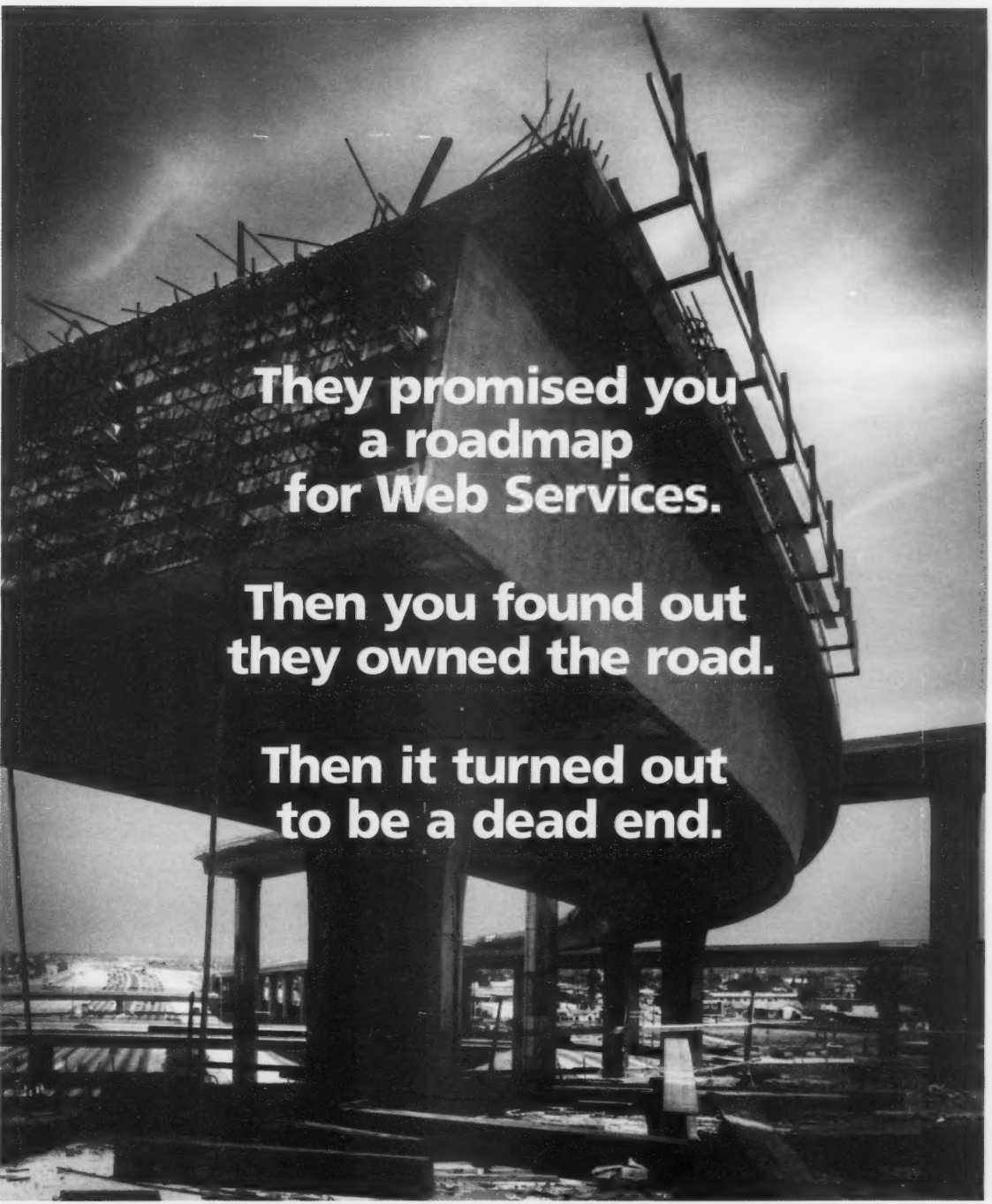
**DURY:** We have learned that keeping each other informed is most important. If it does anything, it builds trust.

**CHOE:** I agree. You should always be able to: 1. trust each other; 2. keep each other informed — communicate often and thoroughly; 3. play to each other's strengths; 4. do not let anyone come between you.

## From a personal career perspective, why would the two of you want to share a job?

**CHOE:** We felt that there was a tremendous opportunity to build on our past success by combining all the acquired technologies under one department with continued focus on the client experience.

**DURY:** Indeed, this will hopefully lead to greater success, since it will create synergies and offer the client the best online brokerage experience. Completing this goal will be a positive for anyone's career. ■



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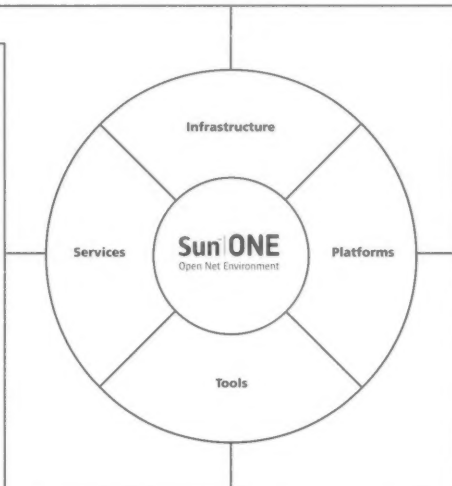
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# Building Collaboration

**Though architects have historically shied away from business automation, some forward-looking firms have begun to tap IT to help them collaborate across geographies and compete more effectively for contracts.**  
By Ted Smalley Bowen

**T**HE IMAGE of the architect as a lone creative genius, a la Frank Lloyd Wright, is a bit misleading. In reality, architecture is an elaborate exercise in communication. Designers often

work in teams that are geographically dispersed. They're in constant contact with clients, and they must coordinate their efforts with myriad specialists—engineers, contractors, government agencies and other parties.

A mind-numbing volume of drawings, plans, forms, budgets, permits and other documents courses through the vast and shifting network of participants in a project. The logistics of tracking, updating and approving the many pieces of information tied to the creation of a building is every bit as

daunting as the actual construction.

Players in the industry range from single-architect studios to multinational operations, but the sector as a whole has been comparatively late to adopt IT. This is partly attributable to the nature of the work.

"As an extremely personalized service conducted by rather small companies, the practice of architecture is different in many ways from manufacturing, banking, insurance and other leading-edge IT adopters," says Mark Clayton, assistant professor of architecture at Texas A&M University in College Station and associate director of the school's CRS Center for design and construction. "The tools have not been very appropriate for architecture."

Given the industry's slim margins and susceptibility to economic swings, it's not surprising that many practices have been reluctant to jump on the business automation bandwagon. Yet some firms have capitalized on IT to expand their reach and buffer themselves from the vagaries of the market.

"The [IT] costs have been very, very high when viewed as part of overhead and capital investment, [so firms] historically have spent virtually zero dollars" on IT, says Clayton. "Realize that in the 1970s, the office technology of an architecture firm was merely a few T squares and filing cabinets."

## Best-Laid Plans

The IT picture for this sector has changed, albeit slowly. According to a 1998 survey conducted by the University of Cincinnati, architectural firms with 10 to 14 employees spent an average of just more than \$64,000 per year on IT, whereas companies with 100 people or more invested an average of \$300,000. Average per-person spending among all firms was \$4,500.

Still, some firms that have implemented virtual private networks (VPN), Web-based project portals and sophisticated project-management ap-

plications are starting to realize the benefits. That's because these tools can help larger companies coordinate their far-flung internal operations and collaborate with clients and partners. Such tools can also help smaller architectural firms compete for big jobs or major subcontracting roles by simplifying the logistics of collaboration and letting the companies emphasize their specialized services.

The heavy communications load of a typical project is illustrated by the shop-drawing review process. As architects enter the construction phase, they circulate drawings to the various contractors and subcontractors involved, who make revisions and add their own details. The architects must check and approve each of these changes.

"It's a long, involved process, and if it doesn't get done in time, it delays the whole project," says Jill Rothenberg, chief technology officer and principal at ADD Inc., a 200-employee architectural firm in Cambridge, Mass.

Usually, each business has its own applications and methods for logging changes and updates throughout a project, which bogs things down and leads to repetitive efforts. The centralized log of a Web-based project-management system can alleviate some of this hassle. Unfortunately, Web-based repositories can be limited and rigid and often represent a least-common denominator, Rothenberg says.

Maintaining a project Web site for a recent job allowed ADD to coordinate with clients in Boston and the Midwest, a lawyer in Chicago, and consultants in multiple locations. It also helped cut travel and postage costs and shortened the length of the project, says Rothenberg, though she was unable to provide cost savings estimates.

The need for architects and other key players to frequently communicate during projects has led some firms to implement VPNs. For example, Kohn Pederson Fox Associates PC (KPF), a 450-person firm in New York, is setting up a VPN to link its London and Tokyo offices and other temporary field offices, says James Brogan, director of IT at KPF. In addition, the VPN will enable the firm to host online project-management applications in-house, a departure from the typical reliance on third parties to run such systems. ■

Bowen is a freelance writer in Boston. Contact him at [ted\\_bowen@hotmail.com](mailto:ted_bowen@hotmail.com)

**Quick Link**

To read about emerging XML standards in the architectural industry, go to:  
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# Learning To Let Go

Delegating is one of the hardest things for a project manager to master, says consultant Stan Portny, author of *Project Management for Dummies*, published by Hungry Minds Inc., which was bought by John Wiley this fall. Portny recently spoke with Computerworld's Kathleen Melymuka about how new project managers can learn to delegate and avoid micromanaging.

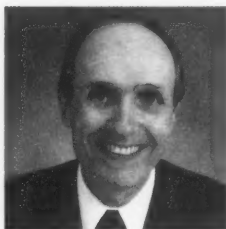
**Why do so many IT project managers find delegating so difficult?** Many people who are project managers never really studied how [to delegate]. They got there because they were good in a technical field. They may be uncomfortable because there's a change in role from a technical specialist to a project manager. No longer are you personally asked to perform all technical tasks; you're asked to guide others.

**How does an IT project manager get over a psychological resistance to delegating?** Understand what the expectations of the new job are. Many new project managers don't have a strong appreciation of how those expectations have changed. Get together with your boss and get a better sense of what's expected.

One of the reasons project managers don't delegate is they like to do the technical work. Figure out ways you can stay involved and understand what's going on without having to be doing the work. Probably the biggest thing to overcome is the knowledge that you can delegate authority but you can't delegate responsibility. You're still the one who has to ensure results.

**"But no one does it as well as I do."** In many instances, you might be right. But the reality is, no matter how good you are, you can't do everything.

## WHO IS HE?



Project management consultant **Stan Portny** has worked with more than 100 public and private organizations in the fields of finance, consumer products, insurance, telecommunications, pharmaceuticals, IT, defense and health care. He is president of Stanley E. Portny and Associates LLC in Short Hills, N.J.

There's something in economics called the Law of Comparative Advantage: Spend your time where you'll get the greatest benefit from your effort. You need to recognize that even if a person is not as good as you are at a task, it may be worth it to delegate so it frees you up to do another task you're uniquely qualified to do and one that will generate more benefits.

**How do you get your team to give you what you want without micromanaging?** The manager needs to design a process to give him or her a level of comfort without living in people's shoes. If you're not comfortable letting people go a couple weeks with no contact, work out upfront a series of points where you'll check in.

It helps to recognize that not all tasks are appropriate to delegate. Tasks that have better-defined procedures tend to be more amenable to delegation because they've been done before and there is a certain amount of confidence that things will go the way you'd like. A task that has poorly defined outcomes may not be appropriate to delegate. If you can't tell them clearly what you're expecting them to do, how can they do it? If there's a task you have to handle yourself, keep it.

**You say delegating isn't an all-or-nothing exercise.**

**Please explain.** There are different levels of delegation, depending on the task, the person and your relationship with the person. The first level is "Get in the know." Get some facts and bring them to me so I can take the next steps. The second level is "Show me the way to go." Get the facts and develop alternative actions based on the facts. Third, "Go when I say so." Do everything above, and be prepared to implement the option I pick. Fourth, "Go unless I say no." Propose what to do and, if I don't stop you, do it. Fifth, "How did it go?" Here's a task, do the analysis, take action and let me know what happened when you're done. Final level: "Just go." I don't need to hear about it again unless there's a problem.

**This could get complicated.** The key is not just to understand the possible levels of delegation but to clearly agree upfront with the person who gets the assignment exactly what the level is. One of my strongest suggestions is to put it in writing. The biggest problems with delegation are often communication problems. Putting it in writing gives a sense of clarity, a reference and a reminder. And did you ever notice how people's attitudes change when you put something in writing? ■

## Do's and Don'ts Of Delegating

- 1 Choose the right person; not every person can handle every task.
- 2 Explain why the task is important; that will get his commitment.
- 3 Encourage him to estimate the time and resources needed to complete the task before he commits.
- 4 Let him know it's OK to say no. If he

can't do it, it's better to know sooner rather than later.

- 5 Encourage him to come back with questions.
- 6 Set up a time frame to monitor progress without micromanaging.
- 7 Recognize performance during and after the task.

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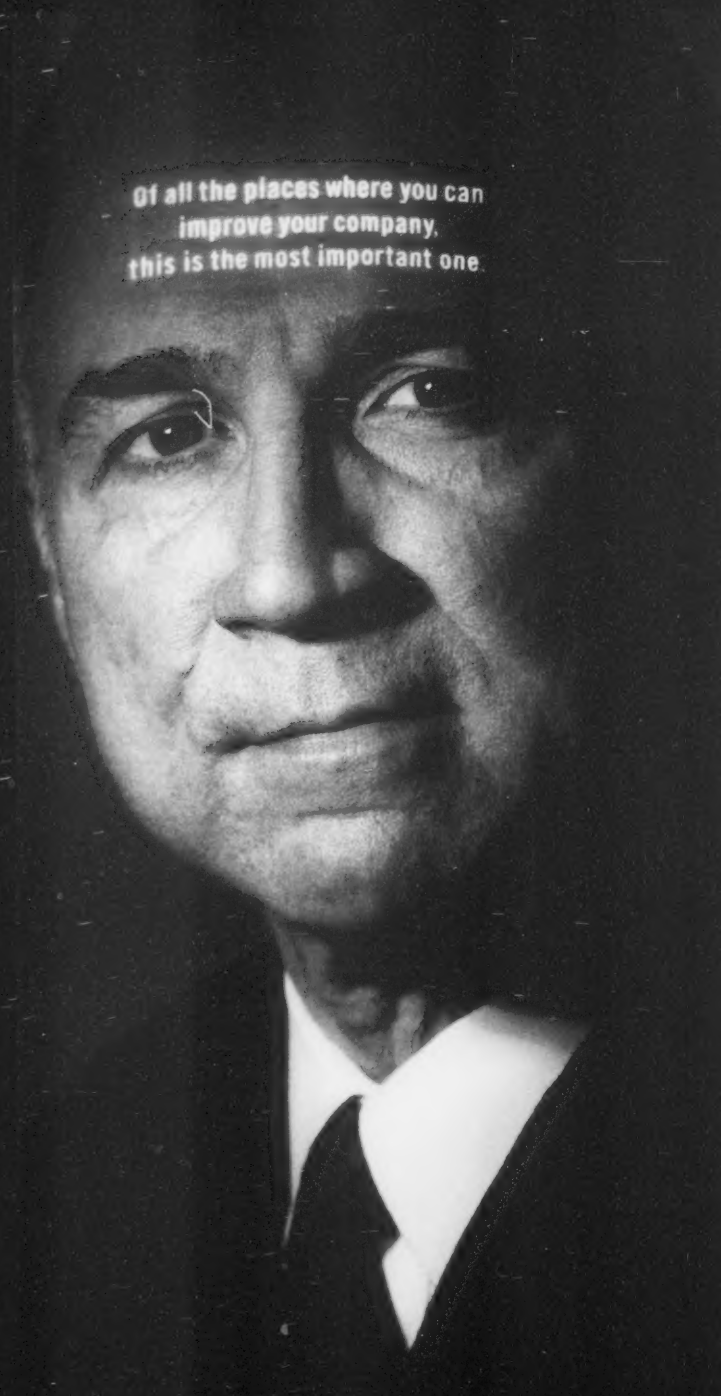
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## WORKSTYLES

# Doing Double Duty at MSNBC

*Since the Sept. 11 terrorist attacks on the U.S., the workload and responsibilities for IT workers and site traffic at MSNBC have doubled.*

**Number of IT employees:** "About 27, divided into four groups: internal IT to handle desktop and infrastructure issues, the Web operations team to manage the server farm and the technology that supports our outward-facing servers, the video team that does the video encoding and manages our satellite systems, and the news production team that sits with our editorial staff and helps publish our content."

**Site users:** "Before Sept. 11, we averaged a little over 3 million unique users per day. On Sept. 11 and the week after, we had five to six times normal traffic. Currently, we're running about two times the norm."

**What kind of pressure has there been on IT since Sept. 11?** "There's been a significant increase. Breaking news is coming all the time, and we're constantly publishing and making sure the site is available with the increased load. We've had to monitor all of our machines much more closely to ensure they're running smoothly. We've had to pull extra shifts to make sure the necessary support is available across all four groups. And we've had to rely more on our outside caching vendor, Akamai, which takes our images and hosts them on their network because the load is so great."

**What has been the biggest IT challenge?** "Just the onslaught of users wanting the information — especially on the 11th and the day following. You can't build your system out with 50 times normal capacity. You try to balance what your normal usage is and give yourselves headroom, but you can't give yourself enough headroom for the kind of day we had on the 11th. That afternoon, we started to rely more heavily on Akamai to serve our images, and putting some of the load

on them helped. We maintained our video streams — we were one of the few sites that did that day. And we broke all our records on video. We had over 150,000 simultaneous video streams at one point."

**Mission-critical systems:** "Our Web servers, or else we're not serving content. E-mail is our lifeblood internally, and database systems and news feeds are also critical."

**Major projects:** "A lot of our special projects have been on hold since Sept. 11 because we need the skills and head count to manage our day-to-day systems. But we are hosting the site for the 2002 Winter Olympics, and there's no slip date for that. It starts on Feb. 8, so we have to ... make sure we are building out our systems to handle that load."

keep a dual career path open to my people for going into management or staying on a technical path."

**Bonus programs:** "All MSNBC.com employees are on a bonus plan based on meeting our business and revenue goals. There also can be spot bonuses or a bonus as part of the employee review process."

**Workday:** "Ordinarily, it would be from 8:30 or 9 [a.m.] to 6:30 or 7 [p.m.]. Now, we get in by 8 or 8:30, and I haven't left much before 8, sometimes 9."

**Must people carry beepers? Cell phones?** "I carry a cell phone, and everyone on my team carries one or the other. After-hours calls have doubled since Sept. 11."

**Security badge/card needed to get into the building or office?** "Yes, and we've had some increased precautions in place since Sept. 11."

**Kind of offices:** "We have our own offices, but not our own building, on the Microsoft campus. The newsroom area looks like any newsroom



## MSNBC

**Interviewee:** Dave Mahlum, manager of site engineering

**Type of business:** Internet news provider

**Main location:** Redmond, Wash.

**Number of employees (and users):** "Internally, we support 160 to 180 users. We also partner with Newsweek and other organizations and provide some support to them."

**IT training:** "I am adamant that my people stay very current. We use in-house training, outside training and vendor training for the products we're using. We are very current on new Microsoft technologies, and we're able to work with them in early beta stages and evaluate what benefits they'll bring us."

**Employee reviews:** "We've traditionally done it twice a year, but we're changing to once a year. We also have informal reviews where we go over project status, success and failures."

**IT career paths:** "In my group, I try to

— very open. And outside the core newsroom, we have two floors for IT, developers and management."

**The last word:** "Working in IT in a news organization is very fast-paced, very dynamic. Working on a standard e-commerce site, you pretty much know day-to-day how many people will come to your site. It doesn't fluctuate a lot. In the news business, you have no idea when you wake up what's coming down the pike that day or what your limits are. The bigger the story, the more people come."

— Leslie Jaye Goff  
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# Dear Career Adviser:

*I have a bachelor's degree in computer science and began my application development career three years ago with C++ and Microsoft Foundation Classes. I switched companies two years ago and began working on e-business applications using Java and Web technologies. However, I was laid off several months ago.*

*My skills are split equally between C++ and Java, and neither seems deep enough for this market. Should I get a master's degree in Java 2 Enterprise Edition (J2EE) computing, or should I keep on hunting for a C++ position?*

— TOUGHING IT OUT

## Dear Tough:

Three years of Java and C++ aren't enough for today's very competitive job market, notes Michael Lanehart, president of

Intelligence Connection in San Francisco. Overall, you'll need to show that you're working on multitier scalable applications, which typically involve J2EE, and that you have a true software engineering ability to solve problems no matter what language is used, he says.

Whether you decide to sit out this very difficult job market by getting an advanced degree or to keep on searching for a job, you'll still need in-depth knowledge in spe-

cialized markets in order to find work, Lanehart says. In other words, if you return to school, you might focus on J2EE and security, becoming an expert in all the security protocols that relate to J2EE. Alternatively, Lanehart says, should you continue to look for a job, you'll need to show specialized knowledge in a particular application requiring Java, plus expertise in a specific area such as biotechnology, data mining, artificial intelligence or e-mail.

Today's Java candidates also need experience with a Java application server such as BEA Systems Inc.'s WebLogic or SilverStream Software Inc.'s eXtend Application Server.

"All in all, Tough should count his blessings," says Lanehart. In this market, some people have been laid off three or four times.



FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at [www.computerworld.com/career\\_adviser](http://www.computerworld.com/career_adviser).

that lists IT positions primarily at East Coast universities and colleges. While faculty vacancies typically occur in synch with the academic year, administrative hiring can occur at any time.

Many colleges and universities are moving away from mainframe applications to more client/server

and Web-based applications, notes Eric Blessner, CIO at HigherEdJobs.com in State College, Pa.

Plus, you might have an additional edge over other job seekers if you understand how to express academic coursework on the Web and the implications of technology changes on the curriculum, a topic addressed by Denver-based eCollege.com.

Beyond these wrinkles, IT within academic institutions mimics typical business. ▀

## Dear Career Adviser:

*You recently provided clues for finding IT jobs in government. Any tips about finding IT jobs in education?*

— ACADEMIC IT

## Dear Academic:

Check out the *Chronicle for Higher Education* and HigherEdJobs.com, which is a site

## EXECUTIVE TRACK



ABARBANEL

ROBERT M. ABARBANEL, formerly a manager and principle scientist in mathematics and computing technology at

The Boeing Co., has been named CIO at Genset SA, a biotechnology company in Paris. Abarbanel will report to CEO Andre Pernet. He will be responsible for IT operations, networking and biocomputing.

Newark, Calif.-based Ross Stores Inc. has named RICHARD WHITE as CIO. White, 43, will report to Jim Peters, president and chief operating officer of the off-price retailer. Prior to this appointment, White served as president of Matthews, White & Co., an Alamo, Calif.-based management and strategy consultancy. Ross Stores operates 431 stores in 21 states

and generated \$2.7 billion in sales in fiscal 2000.

FEI Co. has appointed DAVID O'BRIEN as its new CIO. O'Brien will provide global support for IT infrastructure systems and report to Jack Hodgson, the company's chief financial officer. O'Brien was most recently CIO at Fremont, Calif.-based Credence Systems Corp. He held various senior management positions in IT, marketing and engineering at the test equipment manufacturer for the semiconductor industry. FEI, in Hillsboro, Ore., is a capital equipment manufacturer.



JOBACK

JOHN JOBACK, 54, has joined Frederick, Md.-based Farmers & Mechanics Bank as CIO. He will report to Faye Cannon, president and

CEO of F&M Bancorp, the bank's parent company. Prior to this role, Joback served as CIO and chief operating officer of Net Express Bank NA, an online bank in Silver Spring, Md.



RUBINOW

STEVEN C. RUBINOW has been appointed chief technology officer at Archipelago LLC in Chicago. Rubinow will lead IT operations and client connectivity and development groups, and oversee construction of a state-of-the-art data center. He will report to Gerald D. Putnam, the company's CEO. Most recently, Rubinow was CIO at San Francisco-based NextCard Inc., an online provider of consumer credit.

Proflowers Inc., a floral company in San Diego, has appointed KEVIN HALL as CIO. Hall will report to CEO Bill Strauss. In his new role, Hall will be responsible for the development and implementation of IT initiatives that improve process opera-

tions and Web site usability. Previously, Hall was chief technology and information officer at Amherst Corporate Computer Sales & Solutions Corp. in Merrimack, N.H.

InsureZone Inc., a national online insurance agency in Fort Worth, Texas, has announced the appointment of PAUL HARRISON to the new position of CIO. He will report to President and CEO J. Russell "Rusty" Reid. Harrison previously served as InsureZone's director of development. Prior to joining InsureZone, Harrison was manager of development at Revenue Technology Services Corp., a provider of revenue management software.



GOLDFARB

ERIC GOLDFARB, formerly the CIO at Indianapolis-based Macmillan USA, a division of global media company Pearson PLC in London, has been appointed CIO at Global Knowledge Network Inc., a Cary, N.C.-based provider of IT



MAYFIELD

Luminent Inc. has named ROSS MAYFIELD as its new CIO. In this role, Mayfield will lead the development of a global information system to integrate operations in the U.S., China and Taiwan.

Mayfield will report to Luminent USA President Uri Levy.

Mayfield recently served as a justice information specialist at SEARCH, a Sacramento, Calif.-based consortium for improving criminal justice information systems ([www.search.org](http://www.search.org)), where he developed systems for two state courts and the Federal Reserve Bank.

Prior to this position, Mayfield was CIO at Enterprise Systems Consulting Inc. in Irvine, Calif.

Luminent, a manufacturer of fiber-optic components, is in Chatsworth, Calif.

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# TECHNOLOGY

## THIS WEEK

### CRM: CUSTOMIZATION

In customizing customer relationship management software, the less tampering the better, say practitioners. But that hasn't stopped some users from extending their CRM applications. **PAGE 48**

### CRM: WIRELESS APPLICATIONS

Despite the growing demand for wireless CRM applications, IT managers must balance what users would like against what today's

technology will allow. **PAGE 50**

### FUTURE WATCH

A computer being built in New Mexico will be able to perform more operations in one second than were performed by unaided human beings in all of history, says Stephen M. Younger. A former senior security official at Los Alamos National Laboratory, Younger envisions computers so powerful they become "self-aware." **PAGE 52**

### QUICKSTUDY

A Dynamic Link Library (DLL) is a small application that's called on by a larger application to provide a service or set of data. Although DLLs are specific to Windows, other operating systems use similar programming techniques, such as Shared Objects in Linux. **PAGE 54**

### SECURITY JOURNAL

Although he says there's no replacement for experience, security manager Mathias Thurman prepares to take a security certification exam in order to gain some additional credibility. **PAGE 56**

NICHOLAS PETRELEY

## Lowered XPections

**I**'VE BEEN LOOKING INTO WINDOWS XP, and I may purchase a copy. No, I haven't sold out. My integrity is unassailable — unless the Microsoft PR folks discover my one weakness and offer me a date with Shania Twain.

I am considering Windows XP because I'm a sucker for Windows computer games, and I'm tired of Windows 98 SE crashing all the time. I'm most certainly not going to use it to do real work, however, and I strongly recommend that you don't either.

Windows XP has been surrounded by controversy. But none of the most controversial issues have anything to do with my verdict. Yes, Passport deserves to be burned at the stake. But I have no intention of signing up. Yes, Microsoft should be raked over the coals for threatening license audits to win long-term upgrade deals. But there's nothing morally wrong with requiring individuals to register Windows XP. Having to do so again after hardware changes is annoying. Big deal.

I'm giving it a big raspberry for business use because almost everything about it is a sham. But worst of all, this sham is built on a foundation of needless complexity that exists only to make it difficult for developers to migrate applications from Windows to any other environment.

Take fast user switching, for example. This feature makes for a great demo. Here's mommy working on a document. Sally decides she wants to play a game. Thanks to fast user switching, mommy can take a break and Sally can log into her own account, complete with Hello Kitty desktop wallpaper, to play her game. All without mommy having to close the word processor and log out first.

But the only reason Microsoft calls this "fast user switching" instead of "multiuser operating system" is because Microsoft has been referring to Windows NT as a multiuser operating system since it first appeared on the drawing board. Given that perspective, it seems rather pathetic that it would be a novel experience to see two different users logged in at the same time.

Here's a news flash for Microsoft: I can log in as four different users on my Linux desktop machine. XP users can have custom desktop profiles? I can do better. Two of the Linux users are running the KDE desktop environment, one is running GNOME and another is running WindowMaker. I'm running several applications in

each session, including the same word processor in three of them. I can switch from one session to another with a keystroke. Call me when XP can do that.

What worries me isn't that Windows XP won't catch up, but how it will work under the hood if it does. One reason Unix juggles multiple users well is because its designers didn't have "Prevent developers from moving to other platforms" as their first priority. This led to sane practices, such as restricting an application's ability to write to any directory except the temp directory, the user's home directory and perhaps a device.

In sharp contrast, Windows XP doesn't just allow applications to write to system files, it expects them to. That's why legacy applications often misbehave when two different users run them on the same machine at the same time. If the legacy application is accustomed to writing data to the HKEY\_LOCAL\_MACHINE key in the system registry, the users will either experience data access errors or they will overwrite each other's data.

Microsoft's proposed solution is to get developers to rewrite their applications to use the HKEY\_CURRENT\_USER registry key. What I want to know

is why should applications be able to write to any system registry files? Not only is it totally unnecessary for all of Windows to live or die by a few critical files structured as an incomprehensible hierarchical database, but it's also just plain irresponsible to expose any of these files to user applications. To do so turns every bug into an opportunity for systemwide mischief.

I wish I could say that's the worst of it, but there's more. I've saved Microsoft's "crowning achievements" for Windows XP until next week. ▀



NICHOLAS PETRELEY is a computer consultant and author in Hayward, Calif. He can be reached at [nicholas@petreley.com](mailto:nicholas@petreley.com).

## Customizing a CRM application is risky, users say. But in some cases, the benefits make that worthwhile. By Marc L. Songini

**C**ESSNA AIRCRAFT CO. faced an unusual problem in arming its salespeople with the right data to make and close deals: It wanted to install a sales force automation tool and connect it to the "most extensive" customer database in the aircraft industry, says Dave Turner, manager of network systems at the Wichita, Kan.-based aircraft manufacturer.

Originally, database administrators had to look up prospect information, print it out and then fax it to salespeople. The system also generated multi-page end-of-month printed reports. To save money, time and effort, Cessna decided to automate the process.

The sheer size of the database made the task daunting. Cessna needed to be able to extract information not only about its customers but also on individual airplanes and then slice and dice the data and get it out to the global sales force. The company decided to customize the data models — the sort of move many users and analysts view as a risky proposition.

The less tampering users do with vanilla applications the better, practitioners say. Customizing customer relationship management (CRM) soft-

ware can be expensive, difficult and time-consuming, and it can make the core application unstable and difficult to upgrade. Indeed, some users advocate retooling business processes rather than tinkering with CRM code. However, for companies that need to preserve a competitive advantage, adding vertical-market features or exploiting homegrown technology may make sense.

Rather than customizing, look for applications that are flexible enough to allow changes through configuration, says Steven Bonadio, an analyst at Meta Group Inc. in Stamford, Conn. This includes having access to developer tool kits, being able to develop and configure business rules and workflows, and adding new fields on the user interface layout.

### CRM

On the other hand, Bonadio says, it's unrealistic to assume that there will be no customization. The degree of tweaking will depend on the sophistication of the user's operations, whether external interfaces are needed and the CRM project's goals. "Given that every organization has unique business requirements, some combination of both configuration and customization is often necessary," Bonadio says.

Cessna chose Fairfield, N.J.-based StayinFront Inc.'s Visual Elk sales force automation product and Panorama decision-support tool to extract customer information stored in a Microsoft SQL Server database. The project required programming services from StayinFront to create special data models before two in-house developers took over.

"It's always growing," says Turner. "You don't make it too complex. Define the requirements very clearly, and live, breathe and eat and drink the requirements. You need to be hard in not letting people change the scope of it."

When the new system went live, salespeople were able to access the database from their desktops — both through Web interfaces and other connections, notes Turner. "They look it up in Zimbabwe as the plane rolls up on the ramp and look in the database

and find out who is the chief pilot, who owns it and who operates it," he explains. "It also allows them to do queries by region."

### Competitive Customization

Despite successes, users offer caveats about customizing. "Maintaining customization gets difficult, and you don't get to take advantage of new [upgrade] functions," warns Greg Augustine, director of CRM and e-commerce at TidalWire Inc., a Westboro, Mass.-based distributor of storage interconnect products. Nevertheless, the company decided to customize its e-business Web site, which includes applications from San Mateo, Calif.-based Siebel Systems Inc.

In order to preserve the look and feel of its existing e-commerce site, the firm used a customized version of Siebel's catalog product. Boston-based CRM services provider Akibia Inc. handled integrating the catalog with TidalWire's e-business site. To keep users from having to log in twice — once to get into the main site and a second to get into the catalog to make purchases — TidalWire used Microsoft Corp.'s Active Directory and a special user interface, Augustine says.

The project took four months and cost thousands of dollars but was worth the effort, Augustine says. TidalWire now has a single product catalog that serves its sales force, operations group and Web site. Web requests for price quotes and orders are automatically directed to the right salesperson and can be tracked along with sales data, he says.

Some companies opt to avoid customization. Alberta Treasury Branch-

#### AT A GLANCE

## Should You Customize?

#### It's worth considering if you:

- Need industry-specific features.
- Require changes for competitive advantage.
- Need to preserve legacy code and processes.

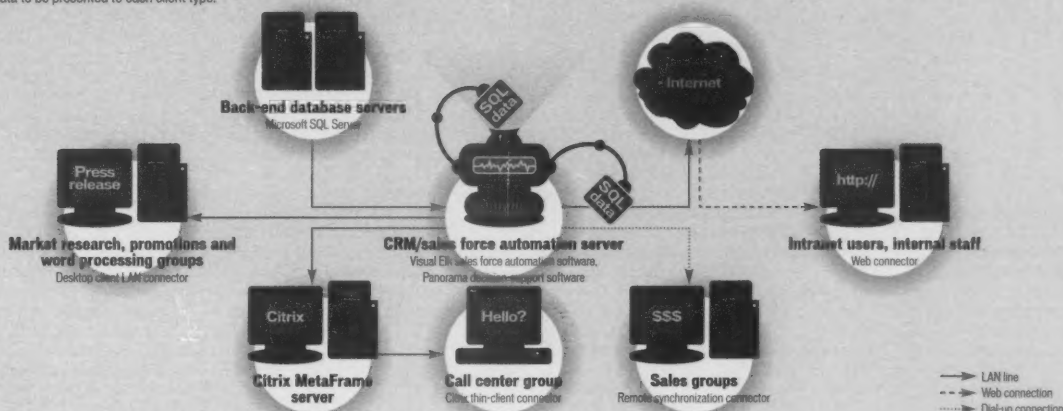
#### But be aware of the trade-offs:

- Customization and ongoing maintenance may be expensive.
- Programming changes may cause problems with the core application.
- CRM software upgrades may not work with the customized code.

# Extending

## Cessna Custom CRM

Cessna's salespeople have access to data through four channels: They can use a thin-client Citrix Systems Inc. MetaFrame server, the Web or a direct LAN connection, or they can periodically sync up the desktop to the network. StayinFront's Panorama software extracts requested data from the SQL Server database, which contains customer information, airplane data, maintenance records and other information, and routes it to the requester through the appropriate channel. Cessna modified the data models and business rules in StayinFront's Visual Elk to allow special sets of data to be presented to each client type.



es, an Edmonton, Alberta-based bank, was able to use IBM's MQSeries application messaging software to enhance its Siebel CRM call center system. The bank wanted to share real-time transaction updates with service staff, says Ken Casey, vice president of operations. MQSeries ties the back-end host with the Siebel applications in the call center in near real time.

By knowing exactly what customers' financial status is, the bank has

been able to improve customer satisfaction, reduce errors and save money by making the process more efficient. The bank hired IBM to build interfaces to its host while tinkering with the core technology as little possible, Casey says.

However, he notes that the bank was cautious about the project. "The last thing we wanted to do was fool around with something that was a proven technology," he says. ▀

## A Collaborative Effort

*CreoScitex hopes to avoid customization issues by adding mySAP's collaboration capabilities to its application suite.*

Not every add-on function requires customization. Some users prefer to combine application suite components from a single vendor for easier installation. But in the area of collaboration, few tools are available today that let CRM applications talk to other applications, says Erin Kinikin, an analyst at Cambridge, Mass.-based Giga Information Group Inc.

At CreoScitex in Burnaby, British Columbia, employees are rolling out collaborative features in SAP AG's mySAP.com Web-based CRM module across 30 offices worldwide. The CRM rollout will tie together a variety of information systems and allow CreoScitex to share customer data throughout the enterprise.

A division of Creo Products Inc. that supplies digital prepress equipment to the graphic arts industry, CreoScitex more than doubled in size following a merger in April last year. It needed to connect different legacy systems and allow business partners and customers to collaborate. The multi-million-dollar project is slated for completion by the end of next year.

"We'll get payback through cost savings in two years through efficiency improve-

ments, and beyond that, what we'll be able to offer our customers will be gravy," says David Pritchard, enterprise resource planning and CRM manager at CreoScitex.

The mySAP system combines the SAP R/3 back end and the newly released SAP CRM Version 3.0. It allows employees and customers to make changes on the fly and replicate those changes rapidly through the different systems, such as order management, supply and distribution, and billing.

"Our products are highly configured, and the ability to make the whole thing work, from quote to ordering into several factories and placing orders in different supply points, is very important," says Pritchard.

He notes that the mySAP suite already contains middleware to translate data between the R/3 and CRM systems, minimizing the customization requirements, cost and difficulty of the project.

"We think that very little customization will be required," Pritchard says. He adds, however, that linking mobile users' laptops will be "quite a bit more complicated due to the need to keep laptops and central database records in sync."

— Marc L. Songini

# CRM



## The technology limitations of wireless largely determine which CRM applications are practical today. By Marc L. Songini

**W**HEN THE state of California faced rolling power blackouts last summer, it decided it needed to let the public know what was going on by way of the wireless Web.

To make that happen, the state developed a wireless notification system that sends out personalized alerts from the My California state Internet portal ([http://my.ca.gov/state/portal/myca\\_homepage.jsp](http://my.ca.gov/state/portal/myca_homepage.jsp)). Using applications from Kana Communications Inc. in Redwood City, Calif., wireless users can subscribe to receive automatic e-mail notifications of impending blackouts, traffic alerts, press releases and even winning lottery numbers, says Arun Baheti, director of e-government for the state of California.

The state internally developed software hooks to let users of personal digital assistants (PDA), cell phones supporting the wireless access protocol (WAP) or other WAP devices receive text messages. And these users can access a stripped-down version of the existing My California Web portal by way of a wireless gateway server.

The state is an early adopter, pio-

neering the wilds of wireless customer relationship management (CRM). Users see the potential value in some basic applications today, but they also face technical obstacles that limit which applications are right for wireless. Those obstacles include questions about connection security, session reliability issues, coverage limitations, decisions about what data to reformat for smaller screens and the possible need to re-engineer business processes to accommodate wireless users.

### Growth vs. Maturity

The demand for wireless CRM applications is growing. According to a recent report from Scottsdale, Ariz.-based Cahners In-Stat Group, about 47% of the U.S. workforce will have access to PalmPilots, WAP phones, pagers and other mobile computing devices by year's end. By 2004, it said, 60% of the workforce will be using wireless devices. And domestic businesses are expected to spend \$37 billion on wireless services this year, a figure that will jump to \$74 billion in 2005.

Fueling this growth is the continued evolution of wireless technology and the fact that it's relatively cheap to deploy, according to Cahners In-Stat.

But users and analysts still have some big doubts about the state of the technology. "Overall, it's still in its infancy," says Dennis Gaughan, an analyst at AMR Research Inc. in Boston. "When I talk to end users about wireless in general, there is still the question about the maturity of the underlying technology and security." He notes that companies tend to roll out CRM packages in stages, and wireless is generally considered in Phase 2 or 3.

Today's wireless CRM applications come in two flavors, Gaughan says. Wireless infrastructure vendors offer applications that can be adapted for CRM, such as IBM's WebSphere Everyplace Suite.

Business application vendors, such as SAP AG and San Mateo, Calif.-based Siebel Systems Inc., either offer CRM applications with embedded wireless capabilities or provide add-on products that attach to application servers

and enable mobile connectivity. These vendors typically offer two options: browser-based real-time access to back-end applications or a Windows CE or Palm-based client/server application that offers local, off-line access to limited data subsets and periodic synchronized updates to the application server. Since synchronization takes place in the background, the latter approach makes slow connections and dropouts tolerable while allowing off-line access to data. However, browser-based access lets users see real-time changes to account information.

For instance, administrators using the mySAP CRM application can install the mySAP Mobile Business module on the application server or an attached server and deliver data to any wireless device with a browser interface. The system can be configured for real-time or synchronized data access.

For some users, the state of wireless CRM technology is good enough; the only question is figuring out how to use it properly. That was an issue for the state of California when dealing with its energy crisis. "There's nothing inherently good about having things on the Web or wireless," says Baheti. "Part of the problem is finding an application that makes sense on wireless. There is no rationale to make it all wireless-enabled. Each particular channel has its benefits and disadvantages, and you need to find the right product to offer on wireless."

In California's case, the impetus came when the governor mandated that citizens be able to receive rapid notification of impending outages without relying on broadcast media.

### AT A GLANCE

## Should You Go Wireless?

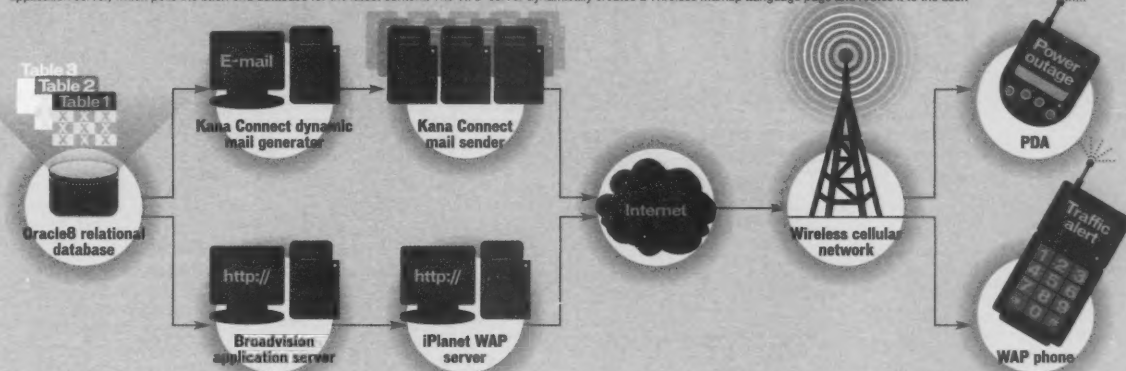
- Wireless CRM currently works best for e-mail alerts and information tidbits such as checking flight times.
- Slow transmission speeds, small screen sizes, intermittent connections and other technical issues currently limit wireless CRM's usefulness for more sophisticated applications.
- Emerging 2.5G and 3G cellular wireless technology should eventually improve performance and reliability.

**WIRELESS  
CRM**

# Strings Attached

## California Wireless Traffic Flow

The State of California offers its wireless users both WAP-based browsing and e-mail notification services. **E-mail alerts:** When a power alert or traffic event occurs, the My California portal triggers an e-mail notification to wireless subscribers. The dynamic e-mail generator queries a back-end customer database and creates a message for each subscriber. It forwards the messages to the e-mail sender, a 12-server farm that can send up to 35,000 e-mail messages per hour via SMTP. Users with WAP or Short Messaging Service-enabled cell phones or a wireless PDA can receive the messages. **WAP access:** Users with WAP devices can access the state's Web site to view specially formatted highway information, lottery results and press releases from the governor's office. When a page is requested, the WAP server queries the Web application server, which polls the back-end database for the latest content. The WAP server dynamically creates a Wireless Markup Language page and routes it to the user.



Others are waiting for improvements in wireless technology before pursuing more ambitious projects. New communications technologies are needed that offer better security and reliability, says Richard Shipley, director of information systems at San Francisco-based Pacific Gas & Electric Co. The utility plans to use Kana software to send wireless e-mail to its customers and deliver power-grid alerts. Beyond wireless e-mail, Shipley says, "a num-

ber of our core business processes could be improved by the application of mobile wireless technology," but not for another year or two, when high-speed third-generation (3G) cellular networks are due.

Others users echo that view. "You should be leery," says Chris Mausolf, manager of e-commerce at St. Paul, Minn.-based Northwest Airlines Inc. "There are a lot of software and service companies that call on a daily basis of-

fering wireless assistance, and that can be expensive and not get you where you need to be." Northwest has offered wireless access to back-end systems for the past two years using home-grown applications. Customers can use their PDAs to get information tidbits such as flight and gate status.

### Keeping It Simple

To make the system work, Northwest created XML-based software hooks that tie portions of its Web site to wireless network services from AvantGo Inc. in Hayward, Calif.

"What we were really trying to focus on were things that provide the most utility for customers," says Mausolf. "We don't want to inundate a small window on a wireless cell phone. We definitely don't want them to download the entire Internet site."

Northwest also forwards information to customers automatically; customers especially like getting flight departure times and other data sent to them, he says. Mausolf declines to divulge costs but says that because the work was done in-house, the integration was inexpensive and is paying for itself in reduced call center loads as more customers rely on wireless self-service.

"There are limitations to what we can do with WAP right now," says Billy Pickle, applications expert at Southern

Co. Currently, field personnel at the Atlanta-based utility still rely on simple radios with screens that provide text-based messages from headquarters. The radios, from Schaumburg, Ill.-based Motorola Inc., interface with a call center system from Brampton, Ontario-based Nortel Networks Corp. The wireless network has been in place since 1997, when Southern built an internal interface to its back-end systems to send pages to field technicians.

Pickle would like something more advanced. "There's a limitation to the amount of data you can stuff into one of these," he says. Pickle wants users to be able to respond to messages, a capability currently unsupported securely by the system, and transmit things like billing data into the back end.

Southern is now considering using either a real-time system or one that would rely on PDAs or mobile workstations that periodically synchronize with the back-end system. The key, however, is to make sure it doesn't further complicate the service workers' lives. "They're out in the field driving to different sites, and we don't want them to have one of these nuisances with cell phone issues," says Pickle. ■

**Quick Link**

To find out more about wireless CRM and related products, visit the online resource guide on our site: [www.computerworld.com/q/23854](http://www.computerworld.com/q/23854)

# atched

# Computer Consciousness

Stephen M. Younger is a nuclear physicist and was until recently the senior associate director for national security at Los Alamos National Laboratory in New Mexico, where his job was to ensure the safety and reliability of the nation's nuclear arsenal. The national labs use the world's most powerful computers to simulate the behavior of nuclear devices.

Los Alamos is now building a mammoth machine, code-named Q, that will occupy a half-acre of floor space and compute 30 trillion operations per second. "In one second, Q will be capable of performing more operations than were performed by unaided human beings in all of history," says Younger.

He recently outlined to Computerworld's Gary H. Anthes his vision for computers so powerful they could become "self-aware."

## How rapidly are computers advancing? In

1945, the maximum rate of computation that a normal person could sustain was about one operation per second. By 2005, the rate of calculation on the fastest supercomputer is expected to exceed 100 trillion operations per second. Nothing else in human history has advanced by a factor of 100 trillion. It is an absolutely astonishing advance in any single human activity.

## Can that continue indefinitely? First, we

still have a number of generations to go with silicon in traditional microprocessors. Second, quantum computing is moving from the highly speculative to the distinctly interesting. Third, I am beginning to think that the days of very large instructional set computer programs might be coming to an end. Maybe we'll go to massive neural nets. Most of the calculations we do now are using techniques developed in the '20s and '30s, with paper and pencil in mind. So we may go to very different ways of doing software.

## WHO IS HE?

**Stephen M. Younger** is a nuclear physicist, an authority on supercomputing and a former national security expert at Los Alamos.

You've spoken of a social revolution that will result from today's developments in biology and supercomputing. Can you give an example of a social issue that will arise with very powerful computers? Supercomputers will enable [military] commanders to sort through more information in a fraction of a second than they could otherwise do in a lifetime. Some of this information will be sent to unmanned aerial vehicles or unmanned tanks that will fight the actual battle. Would we permit a machine to decide which human beings live and which die on the

battlefield? This is not far-fetched. It's a decision that will confront us in this decade.

You've suggested that we'll build supercomputers with artificial consciousness. Why would we want to do that? We are, as a fully conscious species, alone. Creating a self-aware machine would give us a companion, something to talk to about major issues. It could help us to better understand ourselves. The creation of an artificial consciousness will be the greatest technological achievement of our species.

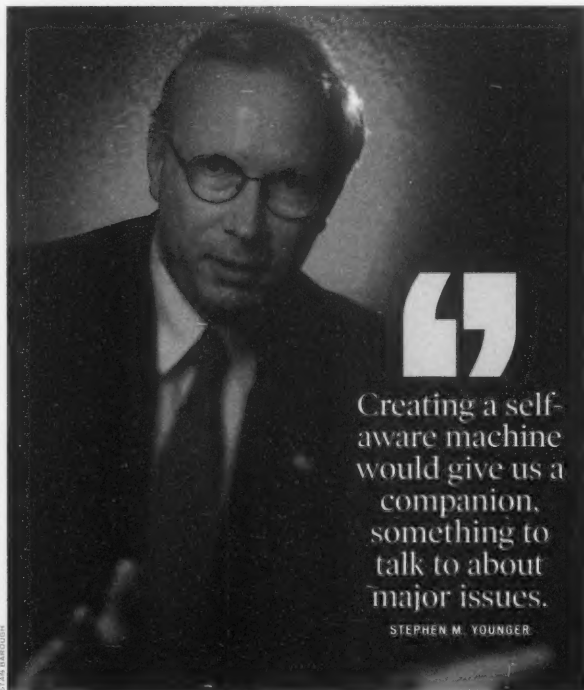
You've even suggested that such a machine might have a soul. When you create an object that is self-aware, that has an existence of its own, you assume a responsibility in some way. So it's important to understanding whether it has a soul or a spirit [that's] in some way analogous to a human spirit. Could we just unplug it? Would that be murder? Are we required to sustain it indefinitely? Would it even want to live forever?

Will we really build such a machine? I think that we will, and within 20 years. Anything that increases by a factor of 100 trillion in 60 years you have to watch, because something really exciting is going to happen.

Are there any dangers in creating these things? You don't want to give them decisions over human beings. You don't want to create autonomous war robots or things like that.

What might be the architecture of such a machine? It will be a different design of hardware — silicon-based, a massive neural net, massively parallel. It won't be an instructional-set computer [with] slavish execution of a set of instructions. The only thing we know that's conscious is our brain, so we make something that's analogous to our brain. It not only has to learn; it has to have the opportunity to change its environment, just as we do.

How far could we take this? People have said we could create our own successor as a species. Could we? Yeah, we could. But human beings are essentially beautiful creatures. I see this machine as helping us, not replacing us. ■



Creating a self-aware machine would give us a companion, something to talk to about major issues.

STEPHEN M. YOUNGER

# EXCHANGE YOUR EXCHANGE.

AND SAVE UP TO 38%. YES, 38%.

Presenting the IBM @server iSeries.<sup>™</sup> Want a less expensive, smarter alternative to upgrading to Microsoft<sup>®</sup> Exchange 2000? Want to keep running the Outlook

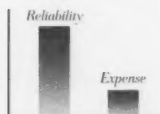


Fig. 1. iSeries Value Proposition.

program your users love, but on a server you'll love even more? Exchange your Exchange for the iSeries server. It lets you support thousands of

Outlook users on one reliable, low-maintenance server. With iNotes<sup>™</sup> Access for Microsoft Outlook it's easy to consolidate multiple Exchange servers onto a single iSeries running Lotus<sup>®</sup> Domino<sup>™</sup> with robust, scalable power. And in the process, help bring reliability, security and functionality up – while keeping upgrade, service and help-desk costs down.

*E-mail graduates to reliability.* The architecture of the iSeries provides a mainframe-inspired environment, where Domino partitions are isolated from one another. And problems in one partition will rarely affect the users in other partitions. Partitions can even automatically restart when necessary.

*Save up to 38% vs. Exchange 2000.* If reliability and consolidation aren't reasons enough, consider this: Migrating your Outlook system to Domino for iSeries can

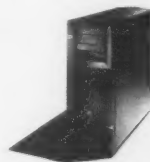
cost up to 38% less than upgrading both your hardware and software to Microsoft Exchange 2000.<sup>1</sup>

*Same front end, better back end.*

To your Outlook users, migration to Domino is virtually seamless. They use the same client software they're used to, but can now get the benefits of Domino, like working offline and full-text search. It also

provides optional failover and load-balancing for e-mail, easier administration, and use of Domino e-collaboration apps.

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Fig. 2. Happy CFO.

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# Dynamic Link Libraries

BY ALAN JOCH

**D**YNAMIC LINK Libraries grew in popularity in the mid-1990s as simple mechanisms for linking and sharing software code with Windows applications at runtime. In concept, the DLL did for Windows what earlier terminate-and-stay-resident programs tried less successfully to do for DOS.

Because DLLs are called at runtime, they can be modified and updated without having to recompile the larger application that uses them. In addition, multiple applications can use the services or data within a communal DLL, thus reducing memory demands in multi-threaded applications.

DLLs also save on memory because they don't get loaded at the same time as the main (calling) program. A DLL file isn't loaded and run until it's needed. For example, if a user is running Microsoft Word or Excel, he can work for a long time without needing to load the printer DLL into memory. Only when the user decides to print the document is the printer DLL loaded and run—and then unloaded.

DLLs were created in the days of the client/server computing movement, when developers needed a way for applications to interact with other programs and systems. But as the use of DLLs on individual PCs increased, so did compatibility and security problems.

"The approach is great in a single-user format, but not in a robust environment," says Frederick G. Kohun, associate dean of the School of Communications and Information Systems at Robert Morris College in Moon Township, Pa. "What scares me about DLLs on the client end is they make all the machines within the organization vulnerable to virus at-

**DEFINITION**

A **Dynamic Link Library (DLL)** is a small application (or sometimes a group of them) that's called on by a larger application to provide a service or set of data. DLLs may reside within the Windows operating system itself or within Windows applications. Although DLLs are specific to Windows, other operating systems use similar programming techniques, such as Shared Objects in Linux.

## Dialing for DLLs

- 1 A Windows application launches the "LoadLibrary" or "LoadLibraryEx" commands to find the DLL.
- 2 If the command succeeds in its search, it loads the DLL into the same virtual address space as the application.\*
- 3 The application then sends the "GetProcAddress" command to determine the addresses of the services or data associated with the DLL.
- 4 "GetProcAddress" returns the addresses to the application.
- 5 The application employs the services or data of the DLL.
- 6 When finished with the DLL, the application invokes the "FreeLibrary" or "FreeLibraryAndExitThread" command to remove the DLL from the virtual address space.

\*If the DLL search fails, LoadLibrary or LoadLibraryEx send back a Null response. At that point, the application may seek out an alternative DLL, or the user of the application may manually type in the correct path to the intended DLL.

tacks. Every time you do a runtime load, [a virus] can attach to the operating system."

If you've gotten that far, then you've probably heard the phrase "DLL hell." This is a situation caused when an application is installed that requires a specific, often older version of a "standard" Windows DLL. The new application installs the old version, replacing the newer one, and as a result, some other applications may no longer work properly. The situation gets worse as new application releases and new versions of Windows increase the number of DLL versions.

Nevertheless, DLLs set the stage for more sophisticated offspring called software components, the encapsulated applications now being built around COM/DCOM from Microsoft Corp., the Common Object Request Broker Architecture (CORBA) from Needham, Mass.-based Object Management Group Inc., and the Java standards from Sun Microsystems Inc.

### DLL Makeovers

Software components carry on the DLL tradition of allowing programmers to build reusable code libraries in binary

form and not forcing customers to recompile applications, notes Francis Beaudet, chief architect at Macadamian Technologies Inc., a software development and consulting firm in Ottawa. Beaudet specializes in developing interactive Web applications using Enterprise JavaBeans.

"Component architectures like DCOM or CORBA build on the concept of the DLL by adding more functionality, including networking support and authentication," he says. "You could even say that COM is just a smarter, better way to use DLLs."

Software developers are now relying on the more advanced software-component option rather than on standard DLLs. That's partly because the standards that define the makeup and activity of components makes the dynamic linking of libraries and applications more efficient and less vulnerable to viruses. And instead of having DLLs residing on individual PCs as in the early client/server era, systems architects are finding central homes for the software components.

"We now see three layers: the graphical layer, the middle-ware layer and the data warehouse layer," says Kohun. "The notion is that a DLL no longer resides on the desktop. They're now at the middleware level."

"[DLLs] are now hidden behind a layer of glue code that takes charge of finding, loading and linking your application with the DLL," Beaudet says.

The result: the widespread availability of reusable components, shared objects and interfaces among Web-based applications. "But in the back end, it's still the same old DLL," Beaudet says. "The mechanism itself will continue to work as it always worked."

In fact, when you access a Web page with an ActiveX component, your browser is downloading a DLL from the Web server, installing it on your PC and linking with it.

"It's now called a component, but that DLL has the same internal structure as the ones that were installed on your PC with Windows 95 six years ago," Beaudet says. "Only the delivery method changed."

Joch is a freelance writer in Francetown, N.H.

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# Security Certification: It's Worth the Effort

*After resisting the idea for years, Mathias decides it's time to study for the CISSP exam*

BY MATHIAS THURMAN

**T**HIS MONTH, I'm going in two directions at once. I have had several tasks to complete in light of the Sept. 11 tragedy in order to reduce the impact of a potential security breach or disaster at my company. And after hours, I'm preparing for a security certification exam.

In my day job, I have user account audits under way, and we're about to implement group structures within our Windows NT domain to ease administration. This powerful NT feature lets us configure groups with different access privileges and place users into the groups that have the proper access profiles for their roles. That should make it easier to apply a consistent set of security rules across our user base.

Our CIO is in the process of executing what's called a "structured walk-through" of our disaster recovery plan. We'll do this by using checklists and running through different scenarios with key staff. If the structured walk-through is a success, we will proceed with a more realistic test using one of our hot sites.

As for physical security, the security guards down in the lobby seem to have an increased awareness of who's coming and going. And it seems that most employees are more aware of their surroundings and more diligent in questioning unusual behavior.

I decided about a month ago to start studying for the Certified Information Systems Security Professional (CISSP) certification offered by the International Information Systems Security Certification Consortium Inc. (ISC)<sup>2</sup> in Framingham, Mass. The CISSP is well

respected within the information security community and is a highly desired — or even required — certification in some industries. Every so often, I do a search of the employment Web sites for the CISSP, and the number of listings requiring that certification is increasing.

The CISSP exam consists of 250 multiple-choice questions. The exam covers 10 common bodies of knowledge

(CBK), ranging from access control to cryptography and physical security. (ISC)<sup>2</sup> says that security professionals with at least three years of experience should have the knowledge necessary to pass the exam. The problem is that, like most security professionals, I don't have three years of knowledge in every one of the CBKs.

## Why Now?

My colleagues have asked why I've waited this long to get my CISSP certification. In the past, I've always thought that I didn't need a

certification, that they were a waste of time and money, and that experience is far better than some acronym next to my name.

My experience with job applicants reinforced those perceptions. About four years ago, I interviewed a candidate for a security administrator position. His résumé included many acronyms, such as ones that stand for Microsoft Certified Systems Engineer, A+ and Certified Novel Administrator. He professed significant experience with Solaris administration and firewall installation and maintenance. He also claimed to have experience with security tools and other security applications, so I was excited to interview him.

When he arrived, I was duly impressed. He was about 30 years old and was dressed appropriately for the inter-

view. However, as the interview progressed, I realized that this person had little real-world experience in security or systems administration. His certifications were all gained through crash courses intended to teach you what you need to know to pass the certification tests. I needed someone who could hit the ground running. I didn't have time to train anyone.

Since then, I've had similar experiences with other candidates. That's not to say that there aren't respectable certifications. The Cisco Certified Internetworking Engineer, which includes a hands-on lab test, is probably the most difficult. In my experience, individuals with this certification are generally well qualified and well versed in some facets of information security as well.

I decided to finally give in and take the CISSP exam after meeting several security professionals who have studied for it. I was impressed with their knowledge, and they had nothing but great things to say about the program.

I also considered the SANS Institute's Global Information Assurance Certification (GIAC) Program. SANS has always been a leader in security information and programs. Its certification covers a wide range of information security issues and is especially common in the government sector. It sounds a bit trivial, but I chose the CISSP over the GIAC exams based purely on popularity. For example, one job search engine produced almost 100 hits on CISSP vs. 14 hits for GIAC.

I gave myself two months to study for the exam, and I'm almost done. I spend at least four hours a day after hours and as much time as possible on weekends.

For reference material, I'm using three publications (see box at right). I'm also using an excellent Web site, <http://www.cccure.org>, which contains reference materials and links that will help me pull together the many documents, presentations and programs I may need to prepare for the CISSP exam. I assembled a binder containing printed material from the Web site and am using it for study. For each of the 10 sections, I read one chapter each from the publications, then review the print-

## SECURITYBOOKSHELF

### *The CISSP Prep Guide: Mastering the Ten Domains of Computer Security*

by Ronald L. Krutz, Russell Dean Vines and Edward M. Stroz (Wiley, 2001). This is the best book for CISSP preparation. It contains a wealth of pure study information. There are no stories, few opinions and few real-world examples — just what you need to know to effectively study for the exam, including a 200-page appendix and glossary.

### *Information Security Management Handbook*

Fourth Edition, edited by Micki Krause and Harold F. Tipton (Auerbach Publications, 1999). This should be required reading. Unlike the Prep Guide, it contains many examples to help readers understand the concepts.

### *CISSP Exam Textbooks (theory and practice)*

by S. Rao Vallabhaneni (SRV Publications, 2001). I've heard of people studying only the SRV publications and passing the test, but I've found errors, and some sections are a bit confusing. However, if you haven't taken a multiple-choice test lately, the practice volume is a good option.

## LINKS:

**[www.isc2.org](http://www.isc2.org)**: Visit the (ISC)<sup>2</sup> site for information on CISSP seminars and online study groups. I recommend joining its free mailing list, which generates about 15 messages per day.

**[www.cccure.org](http://www.cccure.org)**: An excellent resource for CISSP preparation. Check out the study group and mailing list.

**[www.cissps.com](http://www.cissps.com)**: If you're weak on cryptography, this site has an excellent reference.

ed materials. Finally, I'm taking whatever practice exams I can get my hands on. After going through all 10 segments, I've gone back to study my weak areas: cryptography, security models and physical security. I also made flashcards to help with the more difficult concepts.

Do you have resources you're using to prepare for the CISSP or GIAC exams? If so, I welcome your suggestions in the Security Manager's Journal forum. ▀

## Quick Link

For more on the Security Manager's Journal, including past journals, visit:  
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**SECURITY  
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■ This week's journal is written by a real security manager, "Mathias Thurman," whose name and employer have been disguised for obvious reasons. Contact him at [mthurman@hushmail.com](mailto:mthurman@hushmail.com) or go to the Security Manager's Journal forum.





# Software Knows When to Tell a Secret

*Courion's password management software eases help desk headaches*

BY AMY HELEN JOHNSON

**B**EING A NETWORK shop created a dilemma for Penn Mutual Life Insurance Co., says Nancy Alter, manager of the help desk at the Horsham, Pa.-based company. Penn Mutual's 800-plus employees and independent insurance agents were required to change passwords every 90 days for better security. But because of the way the server software implemented account privileges, users needed full administrative rights to the servers to change their own passwords.

Penn Mutual handed the job to the firm's two security people, but the time they spent solving user problems took them away from more strategic tasks, says Alter. "Clearly, their focus should not be on resetting passwords," she says.

So Alter brought in PasswordCourier from Courion Corp. in Framingham, Mass., to let help desk staffers perform password changes. The product gave Penn Mutual a secure, authenticated method of changing passwords that didn't involve granting administrative privileges. It also reduced the average time to solve password problems from about 20 minutes to three to five minutes, says Alter.

## Enforcing the Rules

Moreover, she says, the company's overall security has improved because PasswordCourier enforces strict authentication rules that confirm the identity of the user before the passwords are changed. According to Alter, the next step is to allow employee self-service and train users to help themselves.

Products like PasswordCourier provide better security within a cost-efficient self-service environment, says Pete Lindstrom, an analyst at Hurwitz Group Inc. in Framingham. "Password-reset is the biggest security problem in an enterprise today," he says, "and [PasswordCourier] solves not

only a security problem, but the service problem."

Courion CEO Chris Zannetos says PasswordCourier provides users with a simple graphical user interface (GUI) that allows them to change their passwords themselves. Underneath the GUI is a set of connections to existing directories and corporate databases that contain identity and authentication information.

To initiate password changes, a user accesses Password-

## Courion Corp.

1881 Worcester St.  
Framingham, Mass. 01701  
(508) 879-8400

Web: [www.courion.com](http://www.courion.com)

**The technology:** Password and identity management automation software.

### Company officers:

- Chris Zannetos, president, CEO and founder
- Brian Milas, chief technology officer
- John G. Mokas, chief financial officer

### Milestones:

- June 1996: Company founded
- December 1996: First product released
- May 1999: Courion received first-round funding
- November 2000: Received second-round funding
- October 2001: Released latest

versions of products

**Employees:** 125

**Burn money:** \$18 million from Citizens Capital Inc., JMI Equity Fund LP, QuestMark Partners LP

**Products/pricing:** PasswordCourier, \$14 per user; ProfileBuilder, \$6 per user; AccountCourier, \$20 per user; CertificateCourier, \$10 per user

**Customers:** The Bear Stearns Cos., The Boeing Co., Cummins Engine Co., The Guardian Life Insurance Company of America, Penn Mutual, Raymond James Financial Inc., Target Corp.

### Red flags for IT:

- Products interoperate with only a few applications and directories.
- Some competitors include password-reset functions within broader account-management tools.

**"Password-reset is the biggest security problem in an enterprise today, and [PasswordCourier] solves not only a security problem, but the service problem."**

PETE LINDSTROM, ANALYST, HURWITZ GROUP INC.

**[ the buzz ]**

STATE OF THE MARKET

## The Password Problem

Hurwitz Group's Pete Lindstrom says that resetting passwords is one of the biggest concerns of any organization. Not only is it expensive - estimates of the cost of handling password-related calls to the help desk range from 15% to 40% of the help desk budget, according to analyst firm studies - but it's also a large security problem because the authentication measures used by many companies are easily circumvented.

Because help desk workers are typically low-paid and not well-trained, they're prime targets for social engineering by determined crackers, says Lindstrom. And once thieves have conned a valid user identification and password out of the help desk, they can gain legitimate access to the network, making them even harder to stop. By automating password-resets, he says, vendors like Courion remove the opportunity for potential intruders to manipulate help desk staff to gain access to the corporate network.

Although password reset is a significant problem, says Lindstrom, it's only part of a set of the broader issues of user management. While Courion began by tackling the password-reset problem and moved into account management, its competitors have come from the other direction.

## Access360

Irvine, Calif.  
[www.access360.com](http://www.access360.com)

Access360's keystone product is a provisioning package like Courion's newly released AccountCourier, which allows IT managers to set up, modify and delete user accounts; specify the access rights those accounts have to an enterprise's resources; and reset passwords. The start-up has plenty of resources to challenge Courion and has raised more than \$60 million in funding.

## Waveset Technologies Inc.

Austin, Texas  
[www.waveset.com](http://www.waveset.com)

Account management is at the center of Waveset's Lighthouse product suite, which mirrors Courion's product set with functions like provisioning, identity management, authentication and password-reset.

Courier through a browser, a telephone or a desktop application screen. The software asks questions to confirm identity, using information stored in corporate directories.

PasswordCourier has application programming interfaces for integration with enterprise directories such as Microsoft Corp.'s Active Directory and PeopleSoft Inc.'s CRM Help Desk. It also integrates with any Open Database Connectivity-compliant database. A companion product, ProfileBuilder, lets users update their own information within these corporate directories.

## Fast Learners

The only problem Penn Mutual encountered when installing the software, says Alter, was that Courion didn't have an agent that worked with the firm's older, Novell Inc. NetWare 3.1 file servers. Eventually, she says, Courion fixed the problem, and training began. Training was fast, requiring only about half an hour to teach someone the system, Alter says.

The major benefit that Alter has seen so far is a significant increase in the percentage of problems solved after the first contact with the help desk.

Before Penn Mutual started using PasswordCourier, according to Alter, the rate was 65%; now, it's 75%.

Two recent product releases have expanded Courion's product line into other areas of identity and account management, says Zannetos.

AccountCourier is a provisioning package for creating, modifying and deleting accounts. CertificateCourier is a self-service digital certification registration system that works with public-key infrastructure.

Zannetos says Courion's long-term plans include updating its products to take advantage of new authentication technologies, such as biometrics. ▀

Johnson is a Computerworld contributing writer in Seattle.



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# IT Careers in Consulting

**Post-Y2K, new economy, new threats.** The combination has created some of information technology consulting's most complex challenges. Testing and quality assurance become more important in containing costs. Companies look to automation and enterprise-wide solutions to drive down overhead. And in light of recent events, there's increased urgency around security and disaster recovery.

The Technology Group of **Spheron** offers a comprehensive suite of enterprise-class technology solutions to help clients solve critical business challenges, realize business value and leverage and retain current infrastructure, explains Jim Seery, area vice president for **Spheron** in New York City. The company provides consulting services to the financial services, healthcare, telecommunications, media, manufacturing and pharmaceutical industries.

With a 33-year history, **Spheron's** consultants have worked IT through some of the most dramatic changes in technology. "We bring that business intelligence and experience as part of our project engagements," Seery says.

For consultants, **Spheron** offers a strong emphasis on career development. "We do it smartly, by developing career paths that link directly to market demand," Seery explains. The company offers transferability across industries, types of projects and among its 20 U.S.-based Business Solutions Division offices.

**Analysts International**, based in Minneapolis, provides

staff augmentation and project/solutions business support to its clients, predominately Fortune 500 companies. With more than 3,500 consultants, about 80 percent of the business is staff augmentation for major customers. "Typically our consultants are assigned as individuals to a client team," explains Cathy Peterson, national accounts recruiting manager. The company seeks mainstream technical skills in client/server, mainframe and network environments. "The soft skills we look for include independent ability to work with clients and flexibility. Our customers want people who can address a variety of technical projects, not just one niche," Peterson adds.

"The company has been around for over three decades," she says.

"You'll be surrounded by people who have been with the company for 15 or 20 years. Our interest is in building that type of longevity with our consultants."

Covering the wide swathe of America from New Orleans west and north to Seattle, **Andersen Business Consulting's** western region works with customers in

industries ranging from energy to telecommunications, healthcare, financial markets, entertainment, retail and production. "We look for people with skills that can be applied with our clients today - business analytical skills, technology, change enablement," explains Dave Sparkman,

**Andersen** partner for human resources for the western region. "We focus on building long-lasting relationships with key accounts, providing them with integrated audit, tax and consulting services."

New college grads joining **Andersen** attend orientation classes at the St. Charles facility. "We simulate for them what projects are like, allowing them to learn fundamental skills

plus our Architected Solutions methodology that helps assure no stone goes unturned for our customers," Sparkman says.

More experienced individuals hired go through a course on **Andersen's** consulting approach.

"Initially, our new hires are placed on a project team with a mentor to help get them grounded and get

some traction in this business," adds Sparkman. "This gives our consultants a strong foundation, while we continuously monitor and work with each person to make changes that meet career and personal needs."



For more job opportunities with consulting firms, turn to the pages of **ITcareers.com**.

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**Network Architect**, wanted by optical networking system developer in Oceanport, NJ. Performs network design and analysis of new architectures. Must have Master's degree or equivalent in Engineering, Computer Science or related field and 1 yr. exp. in job offered or in Software Engineering for Optical Networking. Respond to Doreen Connors, HR Department (ref# 009), Tellium, Inc., 2 Crescent Place, Oceanport, NJ 07757.

**Software Engineer** wanted by a telecommunications co. in Boston, MA. Must have a Master's degree (or equiv. education/experience) in Comp. Sci. or related field & 3 yrs. exp. as a Software Eng. or related software development exp., together with 3 yrs. designing and programming exp. utilizing network security, C/C++, TCP/IP, Winsock, BSD socket, Unicode, Multithread, OOA, OOD and 1 yr. utilizing SSL/TLS, Win Platform SDK, ATL, STL, ACE and COM. Please respond to NelZPhone, Inc., 200 High Street, 3rd Fl., Boston, MA 02110. Fax: 615 366-5734. Attn: Matt Eichner reference #WH10232001.

**Database Architect** wanted. Must have Bach. degree in Comp. Sci. or Eng. & 5 yrs. database admin. exp. with Oracle, incl. exp. in the financial services industry with logical database design incl. data modeling & application design, & incl. exp. with data warehouse design. Send resume to Daniel W. Davis, VP, HR Relationship Mgr., Wellington Management Company, LLP, 28 State St., Boston, MA 02109. No third parties or phone calls please.

**Software Engineer** Perform database adm., design, data manipulation & system integration. Perform data warehousing DB for ASP in redundant environment. Implement page cloaking & IP delivery on per search engine basis into data tier of architecture. Deploy server network. Utilize C#, XML, Active Server Pages 3.0, Active Data Objects, HTML & SQL Server 7/2000. Req. B.S. in Comp. Info. Sys. Mail resume to: Franchise Opportunities.com, 1085 Powers Place, Alpharetta, GA 30004.

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**WEB APPLICATION ENGINEER**, NY. Engineer Web based solution through systems analysis & develop technical flow chart based on specifications. Test application workability, integrity, & logical flow. 2 yrs exp req. in Perl, Java, JavaScript, HTTP environment, M.S. in Computer or Information System required. Contact Cosmos Communications, 11-05 44th Dr., Long Island City, NY 11101-5107.

**Software Engineer** Sought by Englewood Colorado consulting company JOB DUTIES: To work in various unanticipated locations throughout the U.S. Research, design and develop computer software systems in conjunction with hardware product development. Analyze software requirements to determine feasibility of design within time and cost restraints. Consult with clients to define needs or problems. Use of People Code, People Tools, SQL, SQL/SQL, Cold Fusion, Crystal Reports, RDBMS, SQL/PLSQL and Vision Reps. Master's in Engineering, Computer Science, Business Administration or related field of study. Plus 2 year in the job offered or 2 year in a related occupation such as a Sr Programmer or Consultant. \$87,300/year, 40 hrs/wk, 8:00 AM - 5PM. Respond by resume to Colorado Department of Labor & Employment, Employment Programs, ATTN: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe St., Denver, CO 80202 and refer to Job Order No. CO 5007238.

**Systems Development Project Mgr** wanted by Business Syst Consultant in Manh. Manage comp & software projects for corp clients; coordinate systems dev work; analyze & evaluate existing systems; direct dev of upgraded systems. Bach in Bus, Comp Sci or Mngmt Info & 4 yrs exp in job offered req. Respond to: BEI/HR Dept, PO Box 4241, GCS, NY 10163.

Several computer related positions available for large software development, support and sales company. Degree, technical skills & experience vary per position. Send resume to Jim Pearce, Thru-Put Corporation, 2099 Gateway Place, Suite 240, San Jose, CA 95110.

Oracle Financials/Business Analyst for NY based co. Must have a Master's degree in Comp. Sc., Bus. Admin. & 1 yr of exp in Comp. S/W analysis and/or consulting. Respond to: HR Dept., Johnson McLean Tech., Inc. 130 W 42nd St., Ste. 1400, New York, NY 10036. (Ref: GG7945IM).

**DATABASE ADMINISTRATORS**. Resp for database maintenance, database applications dev't, migration of production database servers & setup of database server cluster, data warehouse & data mart design, dev't, maint & perf. Req's: Master's deg in Comp Sci/Comp Eng'g or Bach deg plus 5 yrs proj resp exp in database system admin. Send resume to Laura Lum, Promote Technologies, 3177 17th St., San Francisco, CA 94110.

**Member of Technical Staff** (Technology Architect) sought by company in Westminster, CO specializing in computer technology to work in Westminster & other unanticipated job sites in the US. At the highest level, engage in full-life cycle software development of client/server & Web-based software applications, Websites, and other applications. These applications interface w/ different relational database management systems. Analyze requirements, Create designs & design documentation. Code, test & debug the software applications. Engage in project management as required. Provide tech. support to software engineers & other technical staff members. Use Java, Java Servlet, Java Server Pages, HTML, XML, & computer-aided software engineering tools in the design & development process. Requires a master's degree or foreign equivalent in computer science, eng., physics, math, & statistics, or a related field plus 5 yrs. of software development experience or a bachelor's degree or foreign equivalent in computer science, eng., physics, math, & statistics, or a related field plus 5 yrs. of software development experience; working knowledge of Java, relational database management systems, & computer-aided software engineering tools. 8am-5pm, M-F; \$80,000/yr. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CO5007151.

**Megha Soft Technologies, Inc.** is a premier computer technology solutions firm specializing in custom scientific and technical software and IT solutions. We are currently looking for the following:

**Software Engineers:** Research, design and develop computer software programs and systems for system integration, system implementation, and network design. Candidate must be a computer architect able to install, integrate, test, administer and engage in user support for computer applications and tools including: Windows NT/2000, RightFax, performance impact and business objects products. Conducts after development quality testing and up-gradation of software to production stage. Requires at least 5 years of experience.

Send Resume to: Attn: Human Resources, 2323 S. Voss Road, Suite # 540, Houston, Texas 77057 or send via e-mail to: hr@meghasoft.org

**Programmer Analyst** sought by high-end computer distributor in Boulder, CO to work in Boulder and other unanticipated job sites in the U.S. Engage in full-life cycle software development. Specifically design and develop client/server software applications which incorporate Oracle relational database management system and run on UNIX operating systems. Analyze requirements. Create designs and design documentation. Code, test, and debug the software applications. Use Designer 2000, PLS/SQL, Pro\*C, Oracle Forms and Oracle\* Reports in the design and development process. Requires bachelor's or foreign equivalent in Computer Science, Math or related field, including Statistics; 2 yrs. exp. designing and developing Oracle software applications, using PLS/SQL and Pro\*C; working knowledge of Designer 2000, M-F 8am-5pm; \$70,000/yr. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CO5007279.

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- **Database Administrators** (Oracle, SQL Server)
- **Web Based Development** (Java or JavaScript, CORBA, Microsoft ASP, ActiveX, COM/DCOM)

Job opportunities are also available for Sales Managers, Marketing Managers, Business Managers, Human Resources Managers, Controllers and Technical Recruiters. Bachelor's or Master's degree required, depending on position. We also accept the foreign education equivalent of the degree or the degree equivalent in education and experience. Excellent benefits. Send confidential resume and salary requirements to CyberTech Systems, Inc. 1111 West 22nd Street, 8th Floor, Oak Brook, IL 60523 or 8 Nesnammy Interplex Suite 209, Treviso, PA 19053. EOE.

**Software & Technology Manager** sought by company in Boulder, CO specializing in software development to work in Boulder & other unanticipated job sites in the US. Identify & conduct research in emerging technologies for telecommunications applications. Business development utilizing new technologies, manage customer accounts regarding scope, budget, schedule & quality for software projects. Supervise the development & deployment of software systems. These systems will run on Unix as well as Windows environment & may be web-based. Direct & supervise activities of project consultants, software developers & architects. Coordinate testing & optimization of code for newly developed systems. Oversees training & mentoring of staff in the emerging technology area. Requires Master's or foreign equivalent in Electrical Engineering, Computer Science, or related field; 4 yrs. exp. developing computer software applications which run on UNIX operating system. 8am-5pm, M-F; \$105,000/yr. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CO5007227.

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B.S. in Computer Science or related degree; 2 years experience in the job offered or as Programmer Analyst. Must have proof of legal authority to work in the United States.

We offer competitive salary and have excellent benefits. Send resume to **Human Resources, LabOne, Inc., 10101 Renner Blvd., Lenexa, KS 66219**. For further info call job/benefits line 913-577-1247.



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World Wide Technology, Inc. currently has an opportunity available for a Programmer/Analyst to design, develop, and support Web-based and client-side multi-tier applications in UNIX environment with Oracle database, and BEA WebLogic application server, utilizing core Java, JavaScript, JavaServer Pages, Enterprise Java Beans, HTML, XML, and PERL. Qualified applicants should have a Bachelor's Degree in Computer Science, Electrical Engineering, MIS, or in a closely related field. Excellent communication, analytical, and interpersonal skills are required. Competitive salary; 40hr/wk; Mon.-Fri.; 8-5 Send resume to:

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World Wide Technology, Inc.  
127 Weldon Parkway  
St. Louis, MO 63043  
Email: careers@wwt.com  
Fax: 314-919-1441  
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Computer Programmer/Analyst pos in Troy, Dgdn, d/vp, test & implit commercial & financial applcs for SAP R3 acctg systm using ABAP/4 lang. BS in CIS, 2 yrs in pos or prgmr incl ABAP/4 prgmg for SAP R3 systm in commercial data processing. Fax resume (817) 861-4812.

IT Support Specialist sought by WI Value Added Reseller Co. to provide technical assistance, training, installatns, product demonstrations to co. clients & Graphics Systems Corp (GXSC) employees situated in all offices; answer customer queries, coordinate w/ software vendors concerning applicat'n software (i.e. Product Data Mngmnt solut'ns) offered & sold by the co.; aid in the select'n, evaluat'n, implementat'n of software packages/hardware equipments, including communication/network equipment, to improve the business functions & processes of the co.; troubleshoot, maintain, back up GXSC co. database info., help coordinate the web page design content & layout of the co. Bachelor's Degree in Computer Science or comp. related field or equiv. to a credential's evaluat'n. Min exp. 3 mos. in job or job-related. Travel req. Resumes to H.R. Dept. Graphics Systems Corporation, W133 N5138 Campbell Dr., Menomonee Falls, WI 53051. No calls. EOE.

SAP Business Information Warehouse (BW) company seeking experienced SAP BW functional/technical consultants familiar with generic and custom extractors, data modeling, into sources and into cubes. Also seeking SEM and Supply Chain Management/APO experience. Please e-mail resume to Business Information Solutions at recruiting@bisamerica.com or fax to (858) 458-5819.

Coriant, Inc. provides IT strategy consulting, systems integration and software development to clients nationwide. We have immediate, full-time opportunities for both entry-level and experienced professional in any of the following areas:

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- Network Engineers & Consultants
- Systems Engineers (MCSE)
- LAN/WAN Specialist (CISCO)

### APPLICATION DEVELOPMENT

- Microsoft Certified Solution Developer (Visual Basic, Visual C++)
- Database Administrators (Oracle, SQL Server)
- Web Based Development (Java or JavaScript, CORBA, Microsoft ASP, ActiveX, COM/DCOM)

Job opportunities are also available for Sales Managers, Marketing Managers, Business Managers, Human Resources Managers, Controllers and Technical Recruiters. Bachelor's or Master's degree required, depending on position. We also accept the foreign education equivalent of the degree or the degree equivalent in education and experience. Excellent benefits. Send confidential resume and salary requirements to: Coriant, Inc., 8 Neshaminy Interplex, Suite 209, Treviso, PA 19053. An equal opportunity employer.

Programmer Analyst. Develop and write computer programs to store, locate, and retrieve specific documents, data, and information. Bachelor degree in C.S., Eng'g, or similar field req'd, as is 3 yrs exp. in a programmer analyst position. Prior exp must include exp. w/ Coldfusion. Must have exp. w/ DreamWeaver and development of WWW applications. Full-time, day shift, competitive salary. Resumes to Wendell Tankersley, Job No. 1886.23, Computer Task Group, Inc., 5875 Castle Creek Parkway, Suite 208, Indianapolis, IN 46250-5111.

SOFTWARE ENGINEER wanted by computer consulting firm in Sugar Land, TX. Must have M.S. in Computer Science plus experience. Respond by resume to Ms. Barbara K. Nelson, AIA, Digital Consulting Software Services, Inc., One Sugar Creek Center Blvd., Suite 500, Sugar Land, TX 77478.

Programmer/Analyst-Determine feasibility/cost/time req'd for new/modified prog. for financial mgt & compatibility w/current sys. analyze/alter prog to increase operating efficiency; locate/solve errors. Bach/equiv Comp Sci or Engg. 6 mos exp in pos or Comp Engr. Fax resume 313-584-6133.

Database Design Analyst w/ Bachelors and 2 years exp. wanted in Houston, TX. Apply to: HR Dept., American Marvel, Inc., 5801 Memorial Dr., Houston, TX 77007.

Computer Application Specialists wanted in Dallas area to work under direct supervision to develop and design software systems for testing procedures and documentation. Provide installation, technical support & database security of LAN. Requires B.S. in Comp. Sci. plus 1 yr exp. in job offered. Fax resume to Allison Gibson at LNS Environmental Services at (972) 669-3575.

Programmer Analyst. Convert customer requirements into program specifications; analyze the impact of proposed solutions on business applications; ensure satisfactory functioning through testing, analyze results and correct deficiencies according to customer requirements; and review the work done by development team members. Must have Bachelor's degree in Computer Science, Engineering or related, and knowledge of C, C++, UNIX, and Oracle. Send resume with cover letter to APAC Customer Services, Inc., Attn: Cindy Corkery, 6 Parkway North Center, Deerfield, IL 60015

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Programmer Analyst to design, develop, test and implement application systems using DB2, COBOL, DOS and SAP, contact with clients to determine necessary modifications and determine feasibility of requested modifications; prepare and present prototype of modified system to client; install application system based upon prototype; and train users on modified system and create training manuals. Northeastern Illinois location with travel to various client sites as required. Requires B.S. in Computer Science/Engineering plus 2 years experience as programmer analyst, systems analyst or computer consultant. Salary \$72,000/yr., 40 hrs/wk, 9a.m.-5p.m. O.T. via. Applicants must show proof of legal authority to work in the U.S. SEND 2 COPIES OF BOTH RESUME & COVER LETTER TO ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 S. State St., 7 North, Chicago, Illinois 60605. Attn: Brenda Kelly. Reference # V-IL 28211-K. AN EMPLOYER PAID AD. NO CALLS.

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INFORMATION SYSTEMS CONSULTANT sought by consulting firm in Houston, TX. Must have M.S. in M.I.S., plus exp. Two openings. Respond by resume to: Mr. J.K. Clanhahan, R/D, Information Advantage Associates, 3000 Wilcrest, Suite 164, Houston, TX 77042.

SOFTWARE ENGINEERS: Responsible for software integration and external interface development. Use combination of Oracle PL-SQL, CASE tools and PeopleSoft under Oracle 8.x environment to develop, create, modify and maintain application software and/or utility modules for DoD HRMS application, 64K-72K(F-T, 40hr/wk); New Orleans, LA. B.S. Computer Science (or equivalent); 4 yrs experience or related experience in ERP package customization.

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## COMPUTER

Aces International, Inc. is hiring Programmer Analysts, Software Enggs, Financial Analysts and Market Research Analysts. For some positions candidates may be placed on client sites nation-wide. Send resumes to Aces International, Inc., 980 Central Expressway, Santa Clara, CA-95050, email hr@acesintl.com.

## SOFTWARE ENGINEER

Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in Oracle 8i, awk, WebLogic and JCL. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer, knowledge of Oracle 8i, awk, WebLogic and JCL. Salary: \$66,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Manager, Washington County Team PA CareerLink, Milcraft Center, Suite 150LL, 90 West Orestus Street, Washington PA 15301-4517, Job No. WEB 206860.

## SOFTWARE ENGINEER

Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in Java, JavaScript, C++ and Oracle. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer, knowledge of Java, JavaScript, C++ and Oracle. Salary: \$72,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Fayette County Team PA CareerLink, 32 Iowa Street, Uniontown, PA 15401-3513, Job No. WEB 206869.

Systems Analyst: 8a-5p 40 hrs/ wk. Analyze, design, develop, program, implement, test & maintain software applications based on user requis. using C, Oracle 7, Dev2000 & Novell Netware 3.11. Masters or equiv. degree in Computer Sc. or Engg. or Tech; Computer Info Sys; Electronics or Electrical or other related branch of Engineering. In lieu of Masters applicant can have Bachelors in specified majors and 4 yrs of progve. exp. as computer software professional. Resumes to: Axium Systems, Inc. 2550 Northwinds Pkwy, Suite 440, Alpharetta, GA 30004.

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Datalog Technology Resources has openings for Software Engineers for job locations in New Jersey and elsewhere, with at least two years of programming experience. Job Duties: Research, analyze, design, develop, test, and implement software applications using skills such as Visual Basic, Oracle, Visual C++, and MFC on Windows NT/95 environment. Positions require a Masters degree in computer related fields. Excellent Pay and Benefits. Mail resume to HR Dept., Datalog Technology Resources, Inc., 5 Lincoln Highway, Suite 101, Edison, NJ 08820.

Sr. Systems Analyst/Programmers-Sensormatic Electronics Corporation, Boca Raton, Florida, has multiple openings for Sr. Systems Analyst/Programmers to work with an d support BaN ERP software and sub-systems. Candidates must present a Bachelors degree in Computer Science, Information Science, Information Systems or Computer Engineering (software emphasis) or related field and 2-3 years experience using BaN IV. Please apply directly through www.sensormatic.com (employment) by location and reference Job Code AZA1 or send resume and salary requirements to Staffing Department, 8-76 at Sensormatic, PO Box 9037, Boca Raton, Florida 33431-0837. We are proud to be an EEO/AA Employer. M/F/V/D.

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Chief Information Officer. Provide overall management, technical and financial direction for strategic enterprise IT projects; identify changes and trends in computer technology and system architecture and interpret their meaning to senior management; develop solutions to monitor system resources, manage growth and development of the technology teams; provide information security and access management to ensure the integrity of corporate data, proprietary information and related intellectual property; drive the development of enterprise technology standards to ensure compatibility and integration throughout the company; and analyze enterprise program requirements and anticipate resources to meet objectives.

Minimum requirements: Bachelor's degree in Business, Computer Science, Engineering, or related discipline plus 7 years of experience in strategic planning, development, implementation, and maintenance of large-scale integrated on-line relational database systems across multiple hardware and software platforms. In addition, qualified candidate must have a minimum of 5 years management and at least 7 years project management experience.

Competitive salary: 8am-5pm, M-F. Must have indefinite right to work in U.S. Send resume (multiple positions) 40 hrs/wk, \$66,671 - \$78,000/yr. Report/submit resume to Mgr., Beaver County Team PA CareerLink, 2103 Ninth Ave., Beaver Falls, PA 15010. Web: 206125.

Programmer Analyst - PC network management, technical integration. Utilizing knowledge of networking technologies, networking technologies & PC architecture install, configure & manage physically distributed computer networks & network operating systems. Provide user support, network troubleshooting, network expansion, printer services & back up mgmt. Coordinate local & remote hardware & software configuration; implement & execute operations procedures & monitor system resource utilization; perform capacity planning. Interface main application environment, underlying networking software. Carry out performance tuning of network for user applications. Req: B.S. in comp. sci., math/eng/prog./business, commerce or equiv. 1 yr exp in job offered or as programmer analyst/systems analyst. Must have appropriate combination of skills as follows: 2 of A & 2 of B, or 1 of A & 2 of B & 1 of C & 1 of D. A includes Operating Systems: Novell NetWare, Windows NT, OS/2, Windows 95, LAN Server, Banyan Vines, LAN Manager, LANtastic. B includes networking: IPX/SPX, TCP/IP, FTP, Windows NT Workgroups, NetBIOS, X.25. C includes network mgmt: SNMP, LAN Analyser, NetView, NetMap. D includes LAN technologies: Ethernet, Token Ring, FDDI. High mobility preferred. (Multiple positions) 40 hrs/wk, \$66,671 - \$78,000/yr. Report/submit resume to Mgr., Beaver County Team PA CareerLink, 2103 Ninth Ave., Beaver Falls, PA 15010. Web: 206125.

Software Engineer to design, develop, implement, test, maintain and support mainframe software for business applications using COBOL, JCL, SQL, CSP, DB2, and CICS on MVS and Windows platforms. Require BS Degree in Computer Science, an Engineering discipline, or a closely related field with five years of progressively responsible experience in the job offered or in the related occupation of Programmer/Analyst or Programmer. Extensive travel on assignments to various client sites within the US is required. Salary \$67,000 per year. Apply by resume to Raw Kandimalla, President, EVEREST COMP/ERS INC, 900 Old Rosewell Lakes parkway, Suite 300, Rosewell, GA 30076. Attn: JobGov

## SOFTWARE ENGINEER

Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in C, Visual Basic, PowerBuilder, Oracle and SOA Suite. Requirements: Bachelor's Degree, educational or functional equivalent, in Computer Science or related field and two years experience as a software engineer or computer programmer, knowledge of C, Visual Basic, PowerBuilder, Oracle and SOA Suite. Salary: \$66,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Manager, Beaver County Team PA CareerLink, 2103 Ninth Ave., Beaver Falls, PA 15010-3957, Job No. WEB206860.

Programmer Analyst - SAP Specialist: Structured systems analysis, process eng'g, design, configuration, prototyping, development, testing, QA, implementation, integration, maintenance & knowledge transfer of SAP R/2 & SAP R/3 systems for business, incl. banking, mgmt & other commercial applications in a multi-hardware environment, using centralized or distributed Relational Database Mgmt Systems (RDBMS), Fourth Generation Languages (4GL) & other GUI (Graphical User Interface) front-end tools. Req: B.S. in comp. sci., sci. or eng'ing (or equiv.) & 1 yr exp in job offered or as programmer analyst/systems analyst. Must have appropriate combination of skills as follows: 1 of A & 2 of B, or 2 of A & 1 of B, or 2 of A, or 2 of B. A includes FI, CO, SD, MM, PP, QA, PM, HR, PS, WF, IS, BS; B includes ABAP/4, Screen Painter, Menu Painter, SAP Script, Correction/Transport, Data Dictionary, Function Modules, User-Exit Routines, SAP Installation. High mobility preferred. (Multiple positions) 40 hrs/wk, \$66,671 - \$78,000/yr. Apply to: McKeesport/Allegheny Cty CareerLink, ATTN: JS Supervisor, 345 Fifth Avenue, McKeesport, PA 15132. Web #206118



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All candidates must have B.S. in Engineering & fluency in Portuguese. 40 hrs/wk. M-F 8am-5pm. Job in Woburn, MA. Pre-avail. Visa. Fax resume to 781-937 94 58.

**Programmer/Analysts** needed for Houston based firm to work in various unclassified U.S. locations to plan, develop, test, document computer programs, write software based on technical specifications and maintain software programs and test systems. Salary have Bachelor's in Computer Science or Engg. and 2 yrs exp. in job offered or as Software Engineer. Fax resume to HR Dept. at 281-272-2515 or mail to COMPOSOFIT, INC., 440 Benmar, Ste 1270, Houston, Texas 77060. Ref Code: Put PA-1101

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**Programmer Analyst, PeopleSoft Specialist** Structured systems analysis, design, developmt, modification, testing, quality assurance, implementation, integration, maintenance & support of large volume online comp. integrated client-server based fincl & human resource mgt application systems in multi-hardware/multi-software enviro. using centralized or distributed Relational Database Mgmt Systems (RDBMS) such as DB2, Oracle, Sybase, SQL Server, SQL Base & related software. Req: B.S. in sci. comp. sci. engng (or equiv.). 1 yr exp. in job offered or 1 yr as programmer/analyst systems analyst. Must have appropriate combination of skills as follows: 1 of A & 3 of B. A includes Software PeopleSoft Financials, PeopleSoft Human Resource Mgmt. B includes Tools: PeopleTools, PeopleCode, SQL, Crystal Reports, COBOL. High mobility preferred. (Multiple positions) Salary: \$66,671 - \$78,000/yr. Reply to: Manager, India Job Central, 501 North First Street, Indian, PA 15701. Web #206130.

**Programmer Analyst (2 positions)** Duties: Analyze user requirements, procedures and problems to automate processing, identify problems and learn specific input, output and report requirements as follows: Design input, how data is to be summarized, and formats for reports. Modify coding to suit changing and database processes. Use C++, C, Java and other Object Oriented Programming techniques. Carry testing, change control and design management. Develop and implement Intranet and internet based applications. Develop API/Middleware for various Oracle based applications. Qualifications: BS/BBA Degree in Computer Science/Programming/Accounting OR combination of at least 3 years of college education and 3 years of similar experience. Additionally at least two (2) years of experience in similar duties required. Please send your resume to Orient Inc. C/O Hampton Inn, 153 Hampton Ct., Commerce, GA 30529.

**SOFTWARE ENGINEER** to design, develop, test, maintain and implement IBM mainframe web-based application software using Java, Visual Basic, C#, ASP, JavaScript, HTML, COBOL, DB2, MS, DB/DC, CICS, MQ Series and ATG Dynamic under Windows NT and UNIX operating systems; Supervise and mentor junior programmers and engineers. Require Bachelor's degree in Computer Science, an Engineering discipline, or a closely related field with five years of progressively responsible experience in the job offered or as a Programmer/Analyst, or Programmer. Extensive travel on assignment to various client sites within the U.S. is required. Competitive salary offered. Apply by resume to: Marisa Jaffe, Recruiting Mgr., SE Global Software Development Services, Inc., 1110 Northcase Parkway, Suite 250, Marietta, GA 30067. Attn: Rob Jv.

**Software Engineer** Analyze & develop financial & information management systems using structural methodology. Tools: C++, VC++, SQL Server, Visual Basic, Delphi, Btrieve & Xtrieve. Master's degree in Comp. Sci. + 1 yr exp in job offered or as Programmer or Analyst. Previous exp must include: Delphi, SQL Server, 40 hrs/wk. \$66,671 - \$78,000/yr. Reply to: Fayette County Team PA CareerLink, ATTN: JS Supervisor, 32 Iowa Street, Uniontown, PA 15410. Web #206143.

**SOFTWARE ENGINEER** to design, test, implement and maintain software in a client/server environment for financial applications using C++, Visual Basic, Oracle and SQL Server under Windows NT/2000 operating systems; Design and implement interfaces between ERP systems and automated data collection systems using SAP and Oracle. Require B.S. degree in Computer Science/Engineering, Business Administration, or a closely related field with five years of progressively responsible experience in the job offered or as Programmer/Analyst. Extensive travel on assignments to various client sites within the U.S. is required. Competitive salary offered. Apply by resume to: John Brumelow, CTO, Totals Consulting Group, Inc., 200 Abbey Court, Alpharetta, GA 30004. Attn: Job NY.

**COMPUTERIT Product Developer** (San Jose location). Requires Bachelor's degree or foreign equivalent in computer science or computer science and engineering and 2 years' experience in the job offered or 2 years' experience in software development. Stated experience must include patent database design, development of server side caching module for Apache Web Server, use of search criteria management module; utilization of PERL scripts to implement with AIX and Apache Web Server, use of Web Commerce Suite and NET/DA to access DB2 database, and conversion of data from SGV to XML format. 40 hours per week. 8:00 a.m. - 5:00 p.m. Apply with resume to: Nancy McKinney, Delphion, Inc., 3333 Warennville Road, Suite 600, Laie, HI 96852.

Qualified candidates will possess a minimum of 2 years of experience in Software Quality Certification. Strong testing & Problem analysis skills required. Ability to write Test plans & run test scripts required. Experience with PCS, SQL Server, windows NT, VB & Lotus Notes is a must. B.S. in CIS or BIS or Bus Admin or foreign equiv. or combination of ed/exp will be accepted. Resumes & Salary expectations to HR, Compex Technologies, Inc., 1000 Cobb Parkway Blvd., Kennesaw, GA 30144.



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**SOFTWARE ENGINEER** to design, develop, implement, test and maintain application software using object-oriented techniques. C++, VC++, Java, RMI, JavaScript, JSP, JSDK, ASP, XML, and MS SQL Server under Windows NT and UNIX operating systems. Require: M.S. degree in Computer Science, an Engineering discipline, or a closely related field with two years of experience in the job offered. Extensive travel on assignments to various client sites within the U.S. is required. Competitive salary offered. Apply by resume to: Jeannette Bourne, Axion Systems, Inc., 2550 Northwinds Parkway, Suite 440, Alpharetta, GA 30004. Attn: Job AB

**Network Administrator** Install & maintain network systems with multiple servers & printers. Develop, implement & maintain computer hardware, software & networking systems. Maintain & administer Local & Wide Area Networks (LAN/WAN). Technical Environment: Novell Netware 4.11 & 3.12, Windows, TCP/IP, e-mail system, fax server, B.S. in Comp. Sci. or Management Info. Systems + 1 yr. exp. in job offered or as Intern or System Engineer. Previous exp. must include: LAN administration; Novell Netware, 40 hrs/wk. \$66,671 - \$78,000/yr. Applicants must show proof of legal authority to work in the U.S. Send 2 copies of resume & cover letter to Illinois Dept. of Employment Security, 401 S. State St., 7th North, Chicago, IL 60605. Attn: Lela Jackson. Refr V-IL 26368-J. Employer Paid Ad. No calls.

**PROGRAMMER/ANALYST** to analyze, design, develop, test and maintain applications software and GUI's for the telecommunications industry using object-oriented techniques. VC++ - MFC, Visual Basic, COM, Rational Rose, Java and Oracle under Windows NT, UNIX, HP-UX and Linux operating systems. Require B.S. degree in Computer Science/Engineering, or a closely related field with two years of experience in the job offered. Extensive travel on assignment to various client sites within the U.S. is required. Competitive salary offered. Apply by resume to: Eduardo Santos, President, Custom Software Solutions, Inc., 4225 Leasbur Court, Luburn, GA 30047. Attn: Job NV

**Programmer Analyst (Micro/Web) - Multiple Openings**

Structured systems analysis, design, development, testing, quality assurance, implementation, integration, maintenance and support of integrated client-server based systems for business, financial, banking, manufacturing and other commercial business application systems in a multi-hardware/multi-software environment using centralized or distributed relational database management systems, 4GLs (Fourth Generation Languages) and other GUI (Graphical User Interface) front-end tools. Analysis, design and development of client-server applications using object-oriented methodology. Bachelor's Degree (or equivalent) in Computer Science/Math/Engineering/Science/Business/Commerce and 1 yr. experience in job offered or as Software Engineer/Systems Analyst are required. Must have appropriate combination of skills as follows: 3 of B, or 2 of B and 1 of C, or 1 of A and 2 of B. A) includes software packages BPCS, MACPAC, MAPICS, BI includes languages RPG/400, CL, COBOL/400, SOL/400, Query/400, C, C++, and C) includes communication/CASE tools APPC, APPN, SYNCON, AS/SET. High mobility preferred. 40 hrs/wk. \$66,671 - \$78,000 per year. Qualified applicants should contact or send resume to: JS Supervisor, Greene County Team PA CareerLink, 4 West High Street, Waynesburg, PA 15370-1524. Refer to Job Order # WEB 206144.

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**PROGRAMMER/ANALYST** to analyze, design, develop and test various application software and web-based GUI's for the telecommunications industry using object oriented programming techniques. Java, Servlet, Applet, JDBC, ASP, JavaScript, HTML, C++, HTML, XML, JML, and VB under Windows NT/95/98/2000 and HP-UX operating systems. Require: B.S. degree in Computer Science/Engineering, or a closely related field with two years of experience in the job offered. Extensive travel on assignment to various client sites within the U.S. is required. Competitive salary offered. Apply by resume to: Eduardo Santos, President, Custom Software Solutions, Inc., 4225 Leasbur Court, Luburn, GA 30047. Attn: Job GH

**SOFTWARE ENGINEER** Software engineer to design, develop and test computer programs for business applications; development of software requirements to determine feasibility of design, design software system testing and support using experience in applications tools/protocols: X.25, X.400, SNA/DCP, TCP/IP, RSC, high mobility preferred. 40 hrs/wk. 8 am - 5 pm. \$66,671 - \$78,000 per year. Qualified applicants should contact or send resume to: Manager, Armstrong County Team PA CareerLink, 1270 North Main Street, Box 759, Kittering, PA 16021-0759. Refer to Job Order # WEB 206139.

**Programmer Analyst - Legacy Systems (AS/400) - Multiple Openings**

Systems analysis, design, development, testing, debugging, quality assurance, integration, implementation, post implementation support & conversion of complex on-line client-server based accounting, inventory, manufacturing, finance & other business application systems using Relational Database Management Systems (RDBMS); Fourth Generation Languages (4GLs) and other software utilities in a multi-hardware/multi-software environment including IBM mainframes, m-range and PC systems. B.S. in Computer Science/Math/Engineering/Science/Business - Commerce (or equivalent) and 1 yr. experience in job offered or as a Software Engineer/Systems Analyst are required. Must have appropriate combination of skills as follows: 3 of B, or 2 of B and 1 of C, or 1 of A and 2 of B. A) includes software packages BPCS, MACPAC, MAPICS, BI includes languages RPG/400, CL, COBOL/400, SOL/400, Query/400, C, C++, and C) includes communication/CASE tools APPC, APPN, SYNCON, AS/SET. High mobility preferred. 40 hrs/wk. \$66,671 - \$78,000 per year. Qualified applicants should contact or send resume to: JS Supervisor, Greene County Team PA CareerLink, 4 West High Street, Waynesburg, PA 15370-1524. Refer to Job Order # WEB 206144.

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**Programmer Analyst (Tandem) Multiple Openings**

Structured systems analysis, design, development, testing, implementation, integration, maintenance and support of complex massively parallel fault-tolerant on-line transaction processing and communications systems in the banking, financial, communications and other commercial environments. This involves working on multi-hardware/multi-software environment based on the client-server model using both centralized and distributed Relational Database Systems with Tandem NonStop SQL, Third Generation Languages, Communication protocols and the full range of Tandem Software Utilities. B.S. in Computer Science/Math/Engineering/Science/Business/Commerce (or equivalent) and 1 yr. experience in job offered or as Software Engineer/Systems Analyst are required. Must have appropriate combination of skills as follows: 2 of A and 2 of B, or 2 of A and 2 of C, or 2 of A, 1 of B and 1 of C. A includes OS, DBMS and tools Guardian, TAL, C++, COBOL, SCOBOL and TACL, and B includes OS, DBMS and tools Guardian, NonStop Kernel, NonStop OS, Encscribe, DDL, TMF, PATHWAY, SCF and C includes communications tools/protocols: X.25, X.400, SNA/DCP, TCP/IP, RSC, high mobility preferred. 40 hrs/wk. 8 am - 5 pm. \$66,671 - \$78,000 per year. Qualified applicants should contact or send resume to: Manager, Armstrong County Team PA CareerLink, 1270 North Main Street, Box 759, Kittering, PA 16021-0759. Refer to Job Order # WEB 206139.

**SOFTWARE ENGINEER**

Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design, direct software system testing procedures using experience in Java, JavaScript, C++ and Oracle. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer. Knowledge of Java, JavaScript, C++ and Oracle. Salary: \$66,000 - \$78,000. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Manager, Westmoreland County CareerLink, 300 East Hill Street, Youngwood, PA 15687-1808. Job No. WEB 206862.

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## Insurer

operating, I have to go to the command center."

The anthrax scare in the data center, originated by an employee who saw a suspicious piece of mail, ended up being a false alarm, said Empire spokeswoman Julie Gold Anderson. But the episode illustrates the difficulty of conducting business as usual in times that are far from normal.

But as Klepper emphasized, Empire, the largest health insurer in New York state, and its IT operations have to conduct business 24/7 to serve the company's 4.4 million beneficiaries and their employers. This includes developing code for a new Web-based interface for employers, maintaining legacy code and leasing temporary facilities while at the same time searching for a new headquarters in New York.

In the aftermath of the terrorist attacks, Empire also reconfigured one of its automated call centers to track the whereabouts of the 1,900 employees who worked in the World Trade Center, with each confirmation entered into a constantly updated database. Empire lost nine employees and two consultants in the attacks on the U.S.

Klepper was hindered in overseeing his people in the four days after the attacks because on Sept. 11, he had just arrived in Bangalore, India, to study the possibility of shifting some of his code maintenance to a facility operated by the Indian unit of IBM.

Bruce Morlino, IBM's account representative for Empire, was in Bangalore with Klepper and quickly marshaled IBM resources to help support Klepper from a Bangalore hotel conference room. Morlino said this included two around-the-clock open conference call voice circuits to New

York as well as direct e-mail connections through IBM's global network.

Klepper took a commercial flight to Frankfurt and an IBM-arranged jet charter to Montreal and then traveled the rest of the way home in a van. The next week, he set about rebuilding Empire's physical and IT infrastructure.

In the past six weeks, Klepper has leased space in seven temporary facilities and signed a lease on a new headquarters building at 42nd Street and Fifth Avenue, in midtown Manhattan. Empire has also re-

placed all the equipment lost at the World Trade Center, including 265 servers, more than 2,200 desktops and monitors and 413 laptops. IBM supplied all this equipment except for the servers, which were acquired from Compaq Computer Corp.

Some of the temporary locations required significant upgrades to their network infrastructures, Klepper said. In one transient workplace, the W Hotel in midtown, a newly installed Gigabit Ethernet network supported the code development for a Web-based in-

terface to the company's systems, which Klepper called critical to Empire's efforts to serve its customers. Despite the lost time and the lost code in the collapse of the World Trade Center towers, Klepper said, "we're going to get this done by the end of the year."

Shevin Conway, Empire's chief technology officer, said that while the company lost about "10 days' worth" of source code, the entire object-oriented executable code survived because it had been electronically transferred to the Staten Island data center. ▀

### AT A GLANCE

## Empire's Push To Recover

■ **Leases and equips** seven temporary facilities in Manhattan, Long Island and New Jersey.

■ **Replaces** 265 servers, 2,200-plus desktops and monitors and 400-plus laptops.

■ **Installs** Gigabit Ethernet network in Manhattan's W Hotel, which is used by IT staffers, including code developers, hooked into four T1 circuits from Verizon.

■ **Rewrites** source code for Web-based employer interface lost in WTC collapse to meet year-end release deadline.

Continued from page 1

## Microsoft

include Oracle Corp. and Sun Microsystems Inc. Black said he doesn't believe the agreement will change Microsoft's fundamental ability to absorb new products and services into its operating systems.

Among corporate end users, there has never been a consensus of opinion about this case. But some welcomed its apparent end.

"I think the federal government has backed away from it for two reasons. I think there could be a negative impact to the corporate users and consumers. And I think with world events going on, they don't want to deal with it anymore," said Frank Orlow, manager of technical services at Clark Retail Enterprises Inc. in Oak Brook, Ill. "I think it's a good move," he added.

Analysts, end users and others were just beginning Friday to analyze the complex settlement agreement, but the initial view is that it will have little impact on Microsoft's enterprise customers.

Installing non-Microsoft software on new PCs, for instance, "was never an impediment for corporate users," said Al Gilen, an industry analyst at IDC

in Framingham, Mass. "They're going to strip a system and put what they want on it anyway."

David Smith, an analyst at Gartner Inc. in Stamford, Conn., said the settlement could have a positive impact in limited areas.

For instance, users of Palm Inc.'s PalmPilot or Compaq Computer Corp.'s iPaq handhelds might find it easier to sync those devices to their computers if Microsoft is or-

dered to open its application programming interfaces (API) to other vendors, Smith said.

"But it's not like we're ever going to see five different suppliers of desktop operating systems or office [software] suites at competitive prices, with all the playing field level," Smith added.

The settlement ensures that non-Microsoft server software will be able to interoperate with Windows on PCs the

same way Microsoft servers do.

If the states don't agree with the Justice Department's settlement, a remedy phase in the states' case against Microsoft will begin. Even so, the U.S. District Court could still accept the federal settlement and begin a Tunney Act proceeding, which requires the court to collect public comment about an antitrust settlement for 60 days. The judge must then decide, after reviewing those comments and the government's response to them, whether the agreement is in the public's interest.

Microsoft Chairman and Chief Software Architect Bill Gates said that while the settlement will set rules on how the company develops and licenses its software, it will allow it to "continue delivering important new innovations" as well.

"This settlement eliminates the uncertainty of the lawsuit and enables Microsoft to focus on the future," he said. "We are resolved to implementing this settlement promptly and fully."

Microsoft's lead counsel said the settlement "is good for the parties and consumers." U.S. Attorney General John Ashcroft called it the "right result for consumers and businesses." ▀

Cara Garretson and Matt Berger of the IDG News Service contributed to this report.

## Terms of the Microsoft Settlement

### KEY POINTS

**Applies** a broad definition of the term *middleware* that includes browsers, e-mail clients, media players and instant messaging software.

**Requires** Microsoft to provide developers with the APIs used by Microsoft's middleware to interoperate with Windows.

**Forces** disclosure of server protocols to ensure non-Microsoft server software can interoperate with Windows on a PC the same as Microsoft servers.

**Gives** computer makers and consumers the freedom to substitute competing middleware products on Microsoft's operating system.

**Provides** for a panel of three independent, on-site, full-time computer experts to assist in enforcing the final judgment and resolving disputes. The experts will have full access to all of Microsoft's books, records, systems, source code and personnel.

**Bans** Microsoft from entering into agreements that require the exclusive support or development of certain Microsoft software.

**Requires** Microsoft to license any necessary intellectual property to computer makers and software developers.

**Calls** for Microsoft to license its operating system to key computer makers on uniform terms for five years.

**Prohibits** Microsoft from retaliating against computer makers or software developers for supporting or developing certain competing software.



FRANK HAYES/FRANKLY SPEAKING

# Flood of Troubles

**F**ORTY MILLION DOLLARS. That's what a \$6.5 million IT project has cost so far at the city-owned waterworks in Portland, Ore. Sound impossible? Unfortunately, it's not — because it's a billing system project. Which means the original \$6.5 million budget and an additional \$3 million that has been spent so far to get the system working is just a fraction of the real cost.

The other \$30 million-plus is from lost cash flow, and nobody knows how much of that will ever be recovered. Some water customers still haven't been billed, 20 months after the system went live.

And it's going to get worse before it gets better. An independent consultant brought in to plot a rescue strategy for the project figures it will take another 18 months and 62,000 hours of staff time just to get the system working at minimal levels, according to published reports.

Appropriately for this IT horror story, the first automated past-due notices finally started coming out of the system the week before Halloween. But it will take until Thanksgiving just to get them all mailed, and New Year's will be long gone before the system will automatically issue shut-out notices for nonpaying customers.

What went wrong? Everything. Water bureau managers ignored other city departments that pointed out that the vendor, Severn Trent Systems in Houston, had no satisfied customers of comparable size. They had to spend an extra \$350,000 to make existing systems Y2k-ready when the schedule slipped four times.

Then, in order to finally go live in February 2000, they downplayed warnings from their own technical people that the system was unstable and decided not to keep the old system running for a few months as a backup.

All of which would have contributed to a \$10 million nightmare project if this were, say, a customer service or human resources system.

But because it's a billing system, it's a nightmare with a much higher price tag. An estimated \$10 million of the lost cash flow will never be recovered. Another \$3.5 million had to be turned over to commercial collection agencies.

The water bureau's budget has been slashed. And if the city's auditor, KPMG, slaps the department with a negative audit opinion, inter-

est rates on water and sewer bonds would be jacked up, making it more expensive to raise money for future water projects.

That's what happens when a billing-system project goes south. You end up with consequences far out of proportion to the actual mistakes and bad decisions made.

Why? Because *this is where the money comes from*. Cash flow is the lifeblood, the air supply of every business, every enterprise, every government department that charges for its services. And billing systems are how your organization maintains that cash flow.

This is what you *don't* take chances with. Ever. Period.

Keeping that in mind isn't easy, because billing systems are also high-profile projects. And when things go wrong — slipped schedules, busted budgets, persistent bugs — all project managers want to find a way to get back on track. That usually means taking a too-optimistic view that problems aren't serious and that corners can be cut.

That is, setting themselves up for catastrophe. There are projects you can cheat on. You shouldn't, but you might get away with letting a vendor use you as a guinea pig, going live with a buggy system or cutting over to a new system without keeping the old one running as a backup. You'll always tell yourself there are lots of good reasons to cut those corners.

But if you get the urge to do that with a billing system, just remember the IT people in Portland's water bureau who can enumerate even more very good reasons not to cut any corners at all.

About 40 million of them. ■



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## SHARK TANK

**PILOT FISH PLUGS IN** the new UPS at a remote site, and immediately the Building Wiring Fault warning light goes red. We need an electrician to fix the building's wiring problem, fish tells boss. "Why go through that expense?" asks boss. "Just order dumber UPSs that don't check the wiring."

**HALFWAY THROUGH** migrating several mainframe applications to Unix, database analyst pilot fish and his team get the word from company honchos: We're not renewing the mainframe maintenance contract, so you have five weeks to finish the ports. But that's not enough time to finish analysis, design and coding, fish protests. "Just code the new systems," boss tells him. "After you meet the deadline, you'll have plenty of time to go back and complete analysis and design."

**LEASING COMPANY** customer asks IT pilot fish to e-mail him a small software package. Fish sends it and hears back immediately. "Our e-mail won't accept .exe files," says customer. "Could you send a .jpg instead?"

**DATABASE ANALYST** pilot fish at a big insurance company fixes a corrupted production database by shutting it down — and the resulting outage sets off waves of complaints to IT management. So bigwigs declare a new policy: "Next time, all users are to be kicked out of the system," fish says, "and kept out until the database problem is resolved — thereby avoiding an 'outage.'"

**NETWORK ADMINISTRATOR** pilot fish gets complaints about how slowly the IT shop's new calendar program is running. A quick check shows why: There's almost no disk space left, because an admin assistant has entered weekly meetings for the next 10 years. "These meetings have always been and will always be," admin insists. Fish reports: "They did away with those particular meetings the very next week when we moved into our new building."

Pencil me in: [sharky@computerworld.com](mailto:sharky@computerworld.com). You score a sharp Shark shirt if your true tale of IT life sees print — or if it shows up in the daily feed at [computerworld.com/sharky](http://computerworld.com/sharky).

## The 5th Wave



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DB2 software

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